



Sinergie SIMA
Management Conference



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Management of sustainability and well-being for individuals and society

Conference Proceedings

Short Papers

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Short Papers

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To the reader,

this volume contains the long papers of the Sinergie-SIMA 2024 Management Conference, hosted by the University of Parma on June 13th and 14th 2024.

Theory and practice in the field of management have been challenged by the emergence of sustainability and well-being as major global policy priorities. Both sustainability and well-being are complex, value-laden, and strongly interconnected; however, they tend to exist in separate realms.

Sustainability literature has recorded an evolution in the way the concept of sustainable development is understood, leading to the articulation of sustainable development as human “well-being” and “flourishing”, rather than “needs”. Nevertheless, some scholars have pointed out a lack of clarity in the conceptualization, which causes some ambiguity in terms of definition (Ronen & Kerret, 2020). Kjell (2011) observed that human needs and well-being are poorly understood, characterized, and developed by sustainability research. Along the same vein, Helne & Hirvilammi (2015) observed that the overarching goal of sustainable development (i.e., well-being) has often been narrowly interpreted, mainly in economic terms, while connections between the natural environment and human flourishing have been overlooked. More recently, O’Mahony (2022) remarked that the literature conceptualizing human well-being continues to exist largely outside sustainable development. Hence, placing well-being more clearly within the sustainability framework could be highly beneficial to sustainability.

Concurrently, the literature on well-being is almost entirely dissociated from the contributions of nature or the relationships with ecological and planetary systems (Roberts et al., 2015), and the importance of social dimensions is an emergent conclusion. Therefore, the rationale of contextual systems inherent to sustainability research (incorporating views of times, society, and biosphere) could significantly enrich well-being research, fostering a more holistic perspective on well-being and an increased awareness of the limits of individual well-being pursuits (Kjell, 2011).

In brief, though well-being has major implications for sustainable development and vice versa, the body of literature that effectively integrates sustainability and well-being remains in an embryonic stage.

The above considerations aim to act as catalysts for an interdisciplinary debate within the field of management. Enriching the conception of flourishing well-being in sustainability and the contribution of nature to well-being can produce impactful scientific research, as O’Mahony (2022) points out. Equally important is the analysis of the links between sustainability and well-being, encompassing synergies and trade-offs at the organizational level, in value chains, and in interactions with stakeholders across various industries.

The Sinergie-SIMA 2024 Management Conference welcomed contributions based on different theories, methodological approaches, and units of analysis with the potential to empower a transformation for flourishing individuals, society, and the natural world alike. More precisely, the Conference was a great occasion to discuss the research efforts of our research community within tracks related to the:

- Conference theme (Management of sustainability and well-being for individuals and society),
- SIMA thematic groups (Entrepreneurship, Innovation & Technology Management, Intelligenza manageriale nel management, International Business, Marketing, Purpose-driven Businesses, Retailing & Service Management, Small & Family Business, Strategic Communication, Strategy & Governance, Supply Chain Management, Logistics & Operations, Sustainability, and Tourism & Culture Management),
- special tracks (Examining the social and environmental relevance of sustainable digital business models: Impact on business practices and consumers, Growing resilient Italian SMEs, and Perspectives on grand challenges in international business and implications for companies),
- Management Case Studies.

The Conference call for papers gave the opportunity to submit either short and long papers. Overall, the editorial staff received 277 submissions of which 215 short papers and 62 long papers.

For the *short and long papers*, the evaluation followed the peer review process, with a double-blind review performed by, respectively, one or two referees - university lecturers and experts about the topic - selected among SIMA and the community of Sinergie members.

In detail, the referees applied the following criteria to evaluate the submissions:

- clarity of the research aims,
- accuracy of the methodological approach,
- contribution in terms of originality/innovativeness,
- theoretical and practical contribution,
- clarity of communication,
- significance of the bibliographical basis.

The *peer review* process resulted in full acceptance or rejection of the submissions. In the case of disagreement among reviewers' evaluations, the decision was taken by the Chairs of the SIMA thematic groups or conference track. Each work was then sent back to the Authors together with the referees' reports. The suggestions received by the referees were used by the Authors during the presentation of their research works at the Conference.

The evaluation process ended with the acceptance of 211 short papers and 58 long papers. This volume proposes the papers whose Authors have authorized their publication.

All the long papers published in this volume were presented and discussed during the Conference and published online on the web portal of Sinergie-SIMA Management Conference (<https://www.sijmsima.it/>).

While thanking all the Authors, Chairs, and participants, we hope that this volume will contribute to advance knowledge about the management of sustainability and well-being for individuals and society.

The Conference Chairs

Guido Cristini, Beatrice Luceri, Arabella Mocciaro Li Destri, and Marta Ugolini

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Track 1 - Entrepreneurship

Empowering Student Innovators: Framing Entrepreneurship Education in Europe

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Abstract. *The work aims to investigate the drivers of student entrepreneurship in the EU by taking the lens of academic programs, in order to frame the contents that should be thought and the environment that should be created to foster student entrepreneurship. Through a systematic literature review and the use of a software-assisted approach, the work allows for the construction of a framework of EU student entrepreneurship that takes into account the key components of the curricula and the education environmental factors that are relevant for the enhancement of entrepreneurial ideas among students. The work emphasizes the importance of the connection between curricula and the entrepreneurial world, the development of soft skills combined with technical competences and interpersonal skills. It also stresses the relevance of providing programs with technological and physical infrastructures and of ensuring continuous teacher training.*

Keywords: *entrepreneurship education, student entrepreneur, European Union, skills*

Background and objectives. *Student entrepreneurs is a valuable lever of economic development and have a strong potential to be a driver of entrepreneurship in Europe. The EU entrepreneurial ecosystem is increasingly dominated by a cohort of young individuals who are introducing digital-first strategies in various sectors, showing in their business project not only technological skills but also a strong focus on making a positive impact within society, prioritizing purpose and passion in their endeavors.*

These include student entrepreneurs, who are a distinctive group with a unique approach to acquiring and using resources compared to entrepreneurs who start businesses outside the university context (Politis et al., 2012). In fact, during their studies, they have a chance to develop entrepreneurial mindset through entrepreneurship education, and to acquire greater flexibility in choosing their career path (Passavanti et.al, 2023). While the magnitude of new ventures created by students or recent graduates is much higher than for professors and researchers, their performances are comparable (Astebro et al. 2012).

Entrepreneurial motivation is the driving force that prompts an individual to translate the intention to start a business venture into concrete actions. These are fueled by either external factors, such as family, friends, and important individuals who offer support, or by internal drive that are passion, personal challenge and the need to realize their dreams, make a difference, and create something significant (Le and Tran, 2021).

In that context entrepreneurship education finds its relevance. Entrepreneurship education is defined as “the process of equipping individuals with the concepts, skills, and abilities necessary for entrepreneurship to recognize opportunities that others have overlooked and to have the self-confidence to act where others have hesitated” (Zhang et al., 2014). Entrepreneurship education can have a positive impact on students' intrinsic motivation, encouraging them to turn their entrepreneurial intentions into concrete actions. Hence, motivated and well-prepared students who have undergone entrepreneurship training programs are more likely to initiate new ventures. Additionally, the key to entrepreneurial success lies not only in the idea itself but also in the passion, determination, and competence to implement entrepreneurial projects.

In Europe, entrepreneurship education is seen as a key factor for lifelong learning (Peric & Peterka, 2020) and to counteract youth unemployment⁴. In coherence with this, in 2016 the Commission launched the European entrepreneurship competence framework (EntreComp), with the aim to foster actions to improve the entrepreneurial ability across the European Union. After the breakout of the COVID Pandemic, there has been a global trend towards promoting entrepreneurship education to equip graduates with the skills and mindset needed to start their own businesses,

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⁴ European Commission (2013). Reigniting the entrepreneurial spirit in Europe. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52012DC0795>

European Commission. (2014). Thematic Working Group on Entrepreneurship Education. Available at: https://ec.europa.eu/assets/eac/education/experts-groups/2011-2013/key/entrepreneurship-report-2014_en.pdf

as youth entrepreneurship has been recognized as an antidote to counteract graduate unemployment, especially in the EU.

Entrepreneurship education allows not only student to start their own business, but more importantly it trains their entrepreneurial mindset (Rippa et al., 2023) and increase their flexibility in their career choice (Passavanti et al., 2023). Hence, by means of entrepreneurship education students are equipped with the skills needed to face the job market though a flexible approach, that help them identify opportunities and take risks, work in teams and to be better equipped to solve problems⁵.

The educational context can significantly contribute to the development of essential knowledge and skills that young entrepreneurs need to succeed in their business ventures. Universities, in particular, offer a valuable opportunity to acquire specific knowledge that is crucial for entrepreneurial success (Leiva et al., 2023). In fact, they provide an environment apt to transfer to individuals with specific, valuable knowledge that can leverage entrepreneurship projects and can positively influence the project and ideas of students involved in nascent entrepreneurship in Europe (Leiva et al., 2023). Moreover, co-curricular events can provide a platform for young entrepreneurs to build relationships with successful entrepreneurs, investors, mentors, and other key players in the entrepreneurial ecosystem, thereby facilitating the development of valuable social capital (Honig and Davidsson, 2000).

Hence, though entrepreneurship education, European Universities can contribute to accelerating the transfer of research and development (R&D) knowledge and innovation to the broader business community, thereby stimulating economic growth (Sá and Pinho, 2019). The effectiveness of Entrepreneurial Education (EE) is the object of a debate at European and International level international, covering the multitude of factors that have to be taken into consideration for the entrepreneurship programs to be effective, but also about what activities should be included in programs and what are the most efficient teaching models.

Regarding the factors affecting student intentions to become entrepreneurs, the academic literature agrees that there are multiple determinants that must be taken into account and that intervene in student's willingness to become an entrepreneur, beyond motivations. According to a recent literature review carried out by Maheshwari et al. 2022, six factors should be taken into consideration within the evaluation of University students' willingness to become entrepreneurs that include cognitive factors that are related to attitude toward entrepreneurship, social norms, and perceived behavioral control; personality factors: individuals with a higher risk propensity felt more capable and confident in their entrepreneurial endeavors, positively impacting their intentions to engage in entrepreneurship and environmental factors. Moreover, regional context, formal and informal country-level structures, entrepreneurial purpose, and capital availability, all can also function as a bridge between personal characteristics and entrepreneurial aspirations. In particular, access to funding is crucial for initiating new businesses. However, equally significant are factors like foresight regarding future business sectors and the strength of one's social networks. Also, family support and exposure to entrepreneurial role models, were identified as crucial determinants of students' intentions. Social factors, including prior entrepreneurial experience, had varying impacts on intentions. It is also stated that, educational factors, especially entrepreneurship education, significantly influence students' attitudes and intentions towards entrepreneurship (Maheshwari et al., 2022). A meta-study show that entrepreneurial education increases entrepreneurial intent: this effect is significant and applies also to students that have not shown prior interest in entrepreneurship (Martinez-Gregorio et al., 2021).

Despite the acknowledged role of student entrepreneurship in Europe for the competitiveness of the European single market, and the existence studies analyzing the factors that drive students and individuals to become entrepreneurs are missing there is a lack of works that focus on the content of entrepreneurial education programs, to understand how they should be designed and led in order to be able to act as drivers of student entrepreneurship.

In coherence with these premises, the present work aims to identify the drivers of student entrepreneurship by taking the lens of programs at University level, in order to frame the skills that should thought to foster student entrepreneurship, and to identify the education environmental factors that could be key drivers for the enhancement of student entrepreneurship.

Methodology. In coherence with the aim of deepening the field of knowledge about student entrepreneurship from the point of view of education and training, a Systematic Literature Review has been carried out. Systematic Literature Review (SLR) is considered one of the most effective methods for comprehensively recognizing and analyzing a body of literature pertaining to a specific subject. It serves to showcase existing knowledge while also identifying areas for further research, thereby justifying ongoing contributions to current understanding. (Levy and J. Ellis, 2017). In coherence with Tranfield et al. (2003) prescriptions about the SLR, the reviewing process has been divided into the following four phases (Tranfield et al., 2003): Planning, Execution, Evaluation and Analysis.

⁵ European Commission. (2014). Thematic Working Group on Entrepreneurship Education. Available at: https://ec.europa.eu/assets/eac/education/experts-groups/2011-2013/key/entrepreneurship-report-2014_en.pdf

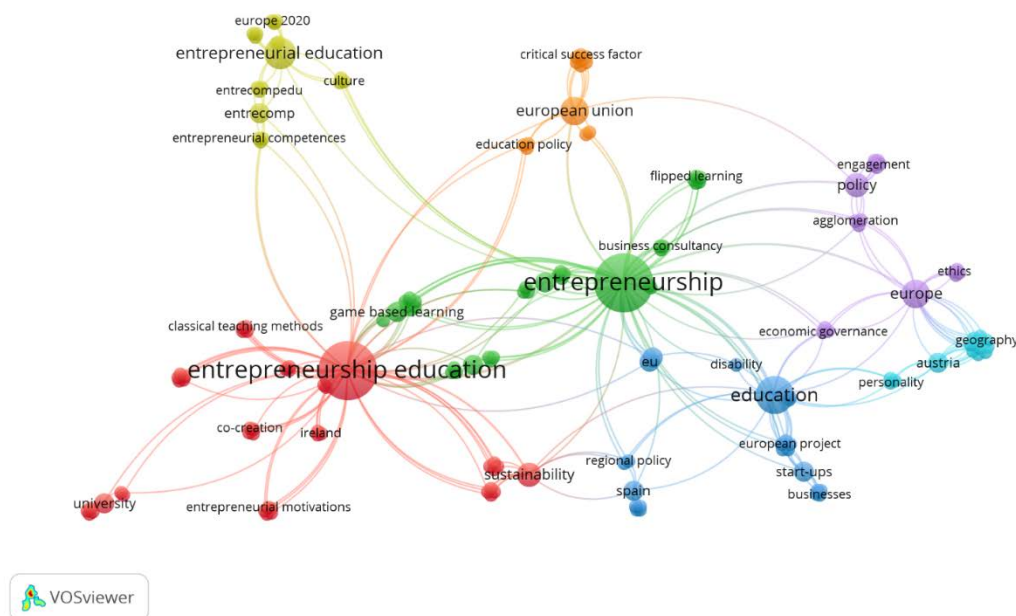
1. *Planning* - A preliminary study about the subject under analysis was carried out in order to deepen the topic and select the keyword for extraction phase, drawing on the grey literature on the subject and restricting the focus to the European Union area.
2. *Execution* - Record extraction was made through the following set of concatenated keywords using Boolean modifiers (Brereton et al., 2007): “entrepreneur*” AND “education” OR “university” AND “European Union” OR “EU”. Extraction was made on SCOPUS database. Extraction was applied to title, abstract and keywords. Data extraction was limited to peer-reviewed scholarly journals written in English, published without any year limit and any limit of discipline, in order to widen the scope of the research. The extraction was made in September 2023. A total number of 188 records were retrieved, duplicates were automatically eliminated. Records were saved for further analysis. Abstracts and article keywords, and main corpus of the article were read. Records not related to the research subject were excluded. The screening resulted in 65 articles selected, saved on .cvs format for further software assisted analysis.
3. *Evaluation* - 39 of the 65 articles were deemed explanatory to the topic under analysis. These were complemented by 3 additional resources identified through snowballing, leading to select 42 resources belonging to 34 scientific journals for further qualitative and quantitative analysis.
4. *Analysis*. To discern the themes covered in the articles, a software-assisted coding process was employed, adhering to the Gioia (2012) methodology. This process unfolded across three phases: an initial phase of open coding, proceeded by axial coding where codes were scrutinized for their interpretative value and organized into pertinent dimensions of significance according to the driving factors, the skills and the challenges, in order to constructing an explanatory framework illustrating core curricula for entrepreneurship education. All the 65 resources were also subjected to bibliometric analysis to visualize co-occurrence networks of important terms from the keywords of the resources extracted in order to frame explaining clusters.

Results

Co-occurrence analysis

The co-occurrence analysis of the resources, which was conducted with VosViewer software on the basis of resource keywords. This allowed for 7 clusters to be identified (minimum cluster size of 12 keyword). Figure 1 visualize the network among the resources. Circles represent the number of co-occurrence while colors identify the clusters.

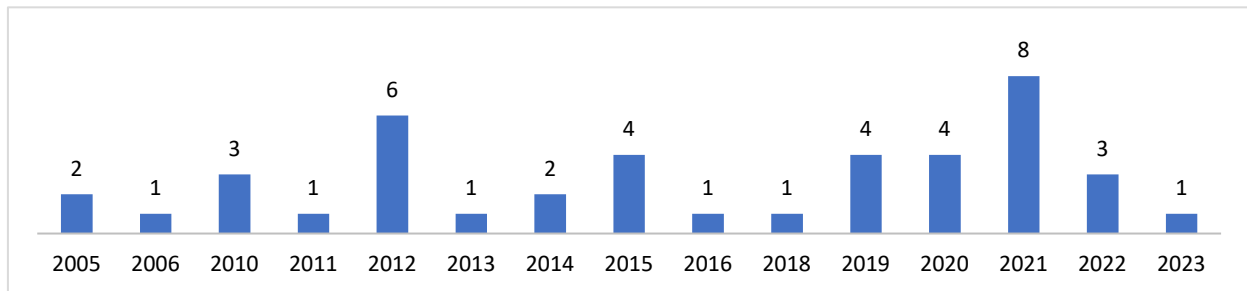
Fig. 1. Visualization of links among resources and main keywords



Cluster 1 (N= 43 items) contains keywords recalling the content of the programs ; Cluster 2 (N=34 items) suggest the role of technology and sustainability in the programs; Cluster 3 (N=23 items) recalls the role of partnerships with the business world; Cluster 4 (N=19 items) contains keyword that recall the regulatory framework at the EU level; Cluster 5 (N=17 items) comprises keyword that focus on the economic and contextual factors; Cluster 6 (N=14 items), recalls the core competences, finally Cluster 7 (N=13 items) suggests the critical success factors of entrepreneurship education.

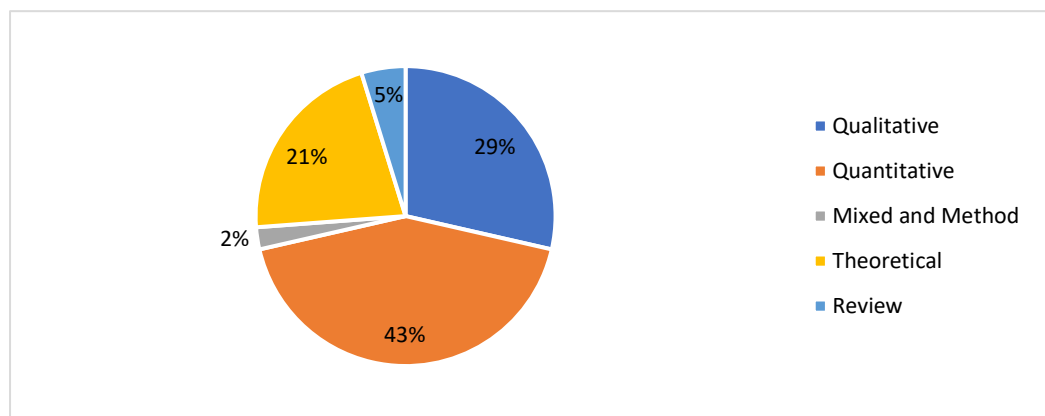
Quantitative analysis. The quantitative analysis of the resources shows that the topic began to be of interest to the academy from 2005, the year in which the first contributions were published in peer reviewed scientific journals, and reached its peak in 2021, which corresponds with the year following the COVID-19 pandemic. Of relevance in terms of the number of publications is 2016, which is the year preceding the elaboration of the DIGI COMP, and 2012, to which 6 resources belong and which is the year following the debt crisis in Europe.

Fig. 2. Number of articles published per year



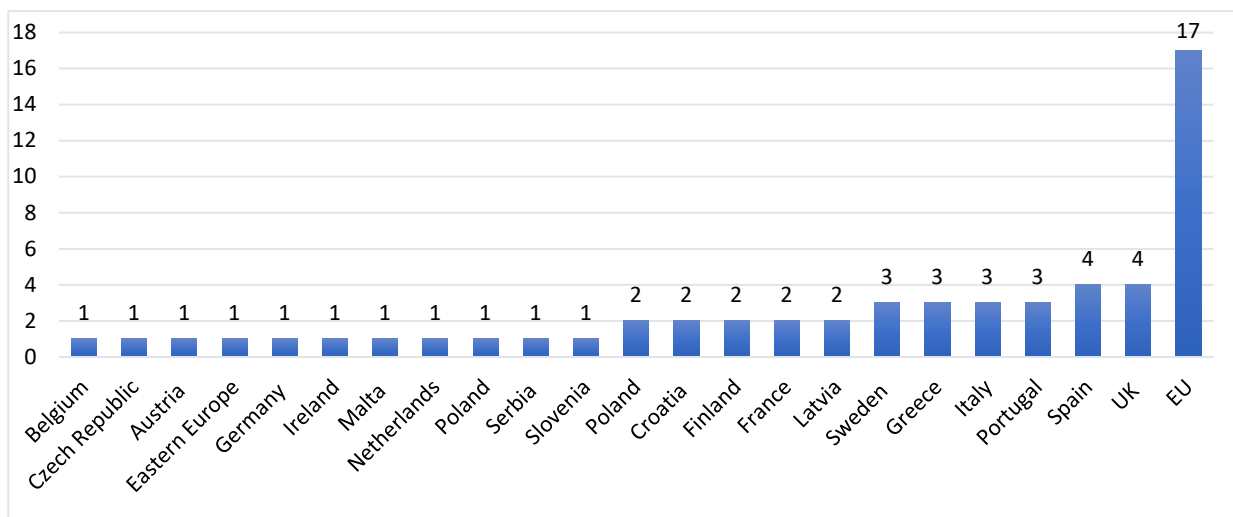
From the point of view of the methodological approach, it emerges that the majority of studies analyzed adopt a field approach to the topic. Quantitative approach characterizes more than 1/5 of the works analyzed, where the survey technique is prevailing. The studies that follow a qualitative approach account for 29% of the total resources, while the number of contributions in the form of reviews (5%) or mixed and method (2%) is limited.

Fig. 3. Methodological approach employed to investigate student entrepreneurship



From the point of view of the countries surveyed, most of the works (17) take into consideration the entire European area, 4 are the works that take into consideration more than one country. There is also considerable interest in the countries of Eastern Europe, and Southern Europe, with particular regard to Spain (4), Italy (3), Greece (3) and Portugal (3).

Fig. 4. Country focus of studies about student entrepreneurship



Qualitative Analysis

Skills to be taught in entrepreneurship programs

Concerning the skills to be thought of, from the coding of the results and discussions of the articles, it is 28 skills that should be taught within entrepreneurship education programmes emerges. These belong to four fundamental categories: cognitive, interpersonal, self-leadership and technical. Table 1 shows the categories and skills identified. Results emphasize that entrepreneurship education is going toward developing enterprising mindsets and reflexive action skills, rather than solely focusing on business building competencies. In fact it is stressed the central role of experiential knowledge within the entrepreneurial learning process, that necessarily has to be completed with traditional Industry-specific knowledge, such as knowledge of technologies, processes or product, management knowledge (business organization, either in administration or management) in order to allow students to acquire specific skills to conduct projects or to establish ventures (Soriano and Castrogiovanni, 2012).

Moreover, it emerges the relevance of adopting a distributed approach to the foundation knowledge and skills needed in entrepreneurship in order to make courses available all students apart from the academic major (Staniewski and Szopiński, 2015). The entrepreneurial approach (López-Núñez et al., 2021) means also developing social and networking competences and the management of teams, together with cognitive skills which relate to the ability to solve complex problems, along with critical thinking, creativity and idea generation (Leiva et al., 2023).

The literature shows that the academy is witnessing a paradigm shift in entrepreneurship education, from theoretical learning “about” to experiential learning (learning ‘for’), the “learning for” is intended to be the acquisition of knowledge that can be used in different contexts and that structure a precise entrepreneurial mindset, including the development of creativity, critical and analytical thinking (Wahid et al., 2017). This also means that teaching models are not suitable for every context and they should be adapted to the specific cultural context where entrepreneurship education occurs (Mets et al., 2021).

Tab. 1. Skills to be thought in academic literature

Skills	Dimension
Ability to generate innovation	Cognitive
Problem solving	
Analytical and critical thinking	
Business acumen	
Creativity and idea generation	
Curiosity	
Ethical and sustainable thinking	
Judgment	
Situation modeling	
Communication Skills	
Networking	
Team work	
Self-confidence and self-reflection	Self Leadership
coping with uncertainty	
Entrepreneurial mindset	
Independence	
Motivation	
Resilience	
Self-regulation	
Taking initiative	
Valuing ideas ambiguity and risk	
Decision making	
Financial and economic literacy	Technical
ICT Skills	
Intellectual property law	
Managerial skills	
Project management	
Industry specific knowledge	
Research and inquiry skills.	

Facilitators affecting the Program performance

The resource analysis identified 34 main facilitators of student entrepreneurship at the European level and categorized them into 8 key areas.

The literature on student entrepreneurship dwells on the factors that are identified as facilitators of nascent entrepreneurship from student education. These cover multiple areas, which are “business community interaction”, “experiential learning”, “incentives”, “tangible and intangible infrastructure”, “mobility”, “peer to peer interaction”, “self-reflection, and “support and motivation”.

What emerges is that Universities are called upon to project entrepreneurship education through activities that are aimed at creating communities of practices and foster greater student contact with the business world (Jones, 2022). This involves contamination between business and academia, by enhancing active involvement of students in business projects

to create an effective entrepreneurial learning experience for the participants (Karanassios et al., 2006). In addition, studies stress the relevance of entrepreneurial mentoring (Hadjichristodoulou et al., 2020) together role models that are key to enhance the motivation of students. In particular, mentoring appears to be critical for student entrepreneurs (Ahsan et al., 2018).

Another key area concerns the structure of the courses, which should promote experiential learning, through multiple activities such as roleplaying, business simulations (Lesinskis et al., 2021; Perić et al., 2020) and other extracurricular activities (Coleman et al., 2010). Student mobility is also key to develop entrepreneurial mindset, by means of foreign trips and exchange.

Studies also stress relevance of providing students with incentives by means of awards and hackaton that drive the development of ideas and startup projects (Slišāne et al., 2021). Studies also recall added aspects that concern University infrastructures, which include the availability of spaces and systems that allow for the full implementation of experiential learning modes, such as digital systems for e-learning, product modeling tools, and laboratories, along with professional development mechanisms for instructors (Perić et al., 2020).

Tab. 2. Facilitators of entrepreneurship education in academic literature

Facilitator	Area
Networking events Communities of Practice Cooperation Business Secor Workshops Networking events Involvement of Universities in Business Communities	Business community Interaction
Extracurricular activities community work Simulations Guest lecturers Project Learning by doing	Experiential learning
Work with rewards Role model Lectures Awards and Hackatons	Incentives
Entrepreneurial structures in Universities Introduce entrepreneurship education at early stage Education of teacher Continuing education Education of instructors E-learning platforms Integrating digital tools	Tangible and intangible Infrastructures
Student Mobility	Mobility
Interactive Group Work Exchange knowledge Networking events peer-to-peer learning and feedback	Peer to peer Interaction
Individual assignment Role playing More inquiry-oriented approaches	Self -reflection
Business Mentorship Role models Giving feedback Practice	Support & Motivation

Main Challenges for student entrepreneurship

The analysis also reveals challenges that are linked to an effective management of student entrepreneurship in Europe carries out multiple challenges. These can be grouped into the following categories: 1) collaboration; 2) training of educators and 3) entrepreneurial culture.

Studies point out that in order to create a conducive environment for entrepreneurship education in Europe, priority should be given to closing the gap between industry and academia to create a better collaboration between the two worlds (Giancarlo and Squazzoni, 2007).

The need to strengthen entrepreneurial skills and to create an entrepreneurial mindset among students raises the challenge of continuous training of educators, for a constant update of their skills (Amiel et al., 2021). Another major challenge covers entrepreneurial culture. There is a need to foster acceptance of the concept of entrepreneurship at the societal level, and to overcome a perceived lack of added value of entrepreneurship in some cultural contexts (Seikkula-Leino et al., 2021). This means overcoming the barriers of negative attitudes toward becoming entrepreneur (Bilić et al., 2021) through ad hoc and international policies to introduce entrepreneurship education into the national curricula at all levels of education and to promote the use of programs based on "learning by doing" (Karanassios et al., 2010) and to cultivate an entrepreneurial mindset among young Europeans (Fonseca et al., 2012).

Conclusions

The main objective of this study is to unveil the factors that determine the success of entrepreneurship programs in terms of skills to be thought and the enhancer of entrepreneurial ideas among students. The work made it possible to highlight the main drivers and challenges in education programs at University level that govern the creation of student entrepreneurs and to frame a “skill canvas” and thus bridging a research gap. Facilitators of student entrepreneurship are mainly related to the creation of synergies between physical and technological infrastructures, the development of soft skills, the interaction with the entrepreneurial world and with peers, as well as with the development of personal abilities. The work also seems to suggest that key to student entrepreneurship is a balance between theoretical knowledge and practical activities, and this new perspective stems from the mingling of two existing pedagogical approaches. Furthermore, the work frames the contents of the course curricula that should be taken into consideration when planning an entrepreneurship program in order to equip it with the ability to train future entrepreneurs. This should include a mix of factors that concern the strengthening of both technical skills and personal, cognitive and relational competencies.

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Entrepreneurial Education as a transition driver from informal to formal entrepreneurship in complexity context: the AWE program

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Abstract

This working progress research investigates the role of entrepreneurial education in fostering the formalization of informal female entrepreneurship. The modalities of this type of transition are analyzed through a focus on the Academy for Women Entrepreneurs program (AWE). Addressing the complexity of women's informal business practices, especially in socio-economically challenging contexts, the research utilizes qualitative method to explore the transformative impact of the AWE program. Preliminary findings suggest that the AWE's comprehensive approach, emphasizing education, mentorship, and networking, may alleviate multifaceted barriers faced by women entrepreneurs. The paper offers implications into the dynamics of transitioning from informal to formal business, and how entrepreneurship education can be a catalyst for women businesses empowerment.

Key words: *Informal Entrepreneurship; Women Entrepreneurship; Entrepreneurship; Complexity*

Framing of the research. *Informal entrepreneurship refers to the globally widespread economic activities, especially prevalent in underdeveloped and developing countries, operating outside official channels. While these activities are legal in every other aspect, they are not formally recognized by institutions, and their growing importance in complex contexts necessitates targeted strategies for understanding and managing them (Williams, 2014). Moreover, informal entrepreneurship also manifests in more developed geographical areas, taking the form of emerging entrepreneurial realities. Although these comply with the reference that frameworks, they often rely on precarious and provisional structures in the initial phases, which do not provide a solid foundation for sustainable growth and development of new entrepreneurial initiatives. Within the realm of female entrepreneurship, this phenomenon is particularly widespread, especially in complex and less developed socio-economic contexts (Welter et al., 2015; Rashid and Ratten, 2020). Female entrepreneurship represents a vital and multifaceted area of the global economy (Muhammad et al., 2020; Greco et al., 2023), with a presence in various sectors. Its analysis requires a critical examination of the socio-economic and cultural factors influencing its development, including market entry barriers, educational and professional restrictions, gender and ethnic discrimination, and other forms of complexity.*

Entrepreneurial Education.

Education is a fundamental characteristic of entrepreneurial development (Honig and Martin, 2014). In a context where it is necessary to interface with a more dynamic and complex market, entrepreneurship education has become an extremely interesting subject of study as a fundamental element of doing modern business (Vanevenhoven, 2013). In entrepreneurship studies, there have therefore been numerous studies that have focused on the factors that influence entrepreneurship itself, highlighting a close relationship between what is defined as entrepreneurial creativity, with entrepreneurial education (Shahab et al., 2019), just as this last element is related to the development of human capital linked to entrepreneurship and entrepreneurship intention (Passaro et al., 2018), characteristic of subjects who already carry out studies with the precise intention of becoming entrepreneurs (Fayolle & Gailly, 2015). However, entrepreneurial intention can also be formed during studies, thus underlining once again the role of entrepreneurship education in the formation of entrepreneurial behavior (Rauch & Hulsink, 2015). Some studies have focused on the typology of entrepreneurial education concerning studies, differentiating between optional education and compulsory education concerning the training offer, showing how both these typologies contribute to the entrepreneurial skills of students during their training process; however, the impact of entrepreneurship education in compulsory courses is closely related to how students perceive their parents' entrepreneurial performance, thus also highlighting a family

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influence (Hahn et al, 2020). But a determining factor in entrepreneurship education linked to training courses is also given by the stakeholders on whom the subjects who propose these courses can count, through their involvement, coaching and mentoring, the sharing of experiences and good practices as well as networking (Bischoff et al, 2018). This therefore confirms how Education often makes a difference because it is linked to access to resources and networks (Cannon, 2008). Some studies show that it not only concerns the creation of a business but also affects managerial skills (Albornoz Pardo, 2013). It is also highlighted that entrepreneurship education is an extremely useful tool to reduce gender differences for women with entrepreneurial aspirations, given that, in the context of studies on career intentions, entrepreneurship is still declining as a field “ male” and that women, particularly young women, may limit their career aspirations because they mistakenly believe they do not possess the necessary skills and abilities (Wilson et al., 2007).

Informal Entrepreneurship

Informal entrepreneurship represents a type of business, common globally, which involves the creation and management of the business without it being registered with the competent legal authorities (Mallon & Fainshmidt, 2022). According to the OCED, “informal entrepreneurs are defined as those starting a business or are the owner/manager of a business who engage in monetary transactions not declared to the state for tax, benefit and/or labor law purposes when they should be declared but which are legal in all other respects” (Williams, 2014). The concept of informal entrepreneurship is therefore profoundly linked to that of the informal economy: in informal entrepreneurship, the monetary transactions are all, or largely, not traced, and therefore not declared to the competent authorities, even though they are legitimate goods or services. , given that the conditions described, in the case of illicit goods and services, we are talking about a criminal and non-informal economy, where some populations who do not seem to be predisposed to entrepreneurial dynamics, in reality, are regularizing these businesses would bring economic development to those countries (Williams & Nadin, 2010). If many studies recognize the cost or level of difficulty as the predominant factor in the choice to set up an informal business, other studies instead highlight how the choice is linked, in a more generic way, to the conditions of that market: certainly, the costs of registration and formalization have an impact, but the level of poverty and infrastructure also make the informal aspect more attractive (Siqueira et al., 2016). The level and type of education is also a factor that has a significant impact on the development of informal entrepreneurship, where the presence of secondary and tertiary education favors formal entrepreneurship (Jiménez et al., 2015). However, the university, if supported by correct government policies, can also have a decisive role in attracting economic support for the informal microeconomy (Madichie & Agu, 2023). It is therefore confirmed that the level of quality of political and economic institutions are also factors that influence the type of entrepreneurship, increasing formal entrepreneurship and decreasing informal entrepreneurship (Autio & Fu, 2015), just as the sociodemographic level is closely linked to the level of informal entrepreneurship present (Santos et al., 2021). It is therefore underlined how correct government policies have an impact on informal entrepreneurship, reducing this phenomenon (Omri, 2020). In emerging markets, where the presence of informal entrepreneurship is strong, the very presence of foreign companies and their interaction with local ones is a factor of change towards a greater presence of forms of formal entrepreneurship (Bu & Cuervo-Cazurra, 2020). The factors that influence the development of informal businesses are therefore varied, from access to the market and the role of the family to the sharing of capital and resources, with a view to a true ecosystem of informal entrepreneurship (Igwe et al., 2020). The literature therefore underlines the importance of analyzing this phenomenon. Knowledge of the dynamics linked to informal entrepreneurship can also help managers to better understand the market in which they operate and in particular the nature of a company’s supply chain, thus making it more effective to formulate strategies, but since the informal businesses operate outside the regulatory system, their dynamics and activities are difficult to trace compared to formal businesses (Thai & Turkina, 2014).

Complexity in Female Entrepreneurship

Women’s entrepreneurship (WE) represents a dynamic and multifaceted segment of the global economy. Similar to the broad scope of food delivery, women’s entrepreneurship encompasses a wide range of activities and sectors. This complexity and non-linearity render the topic of women’s entrepreneurship a highly intricate subject for academic study. Brush et al. (2009) define women’s entrepreneurship as the process where women organize all types of businesses, including micro, small, and medium enterprises. Hughes et al. (2012) further expand this definition by emphasizing the role of women entrepreneurs in both formal and informal economies, consequently, this necessitates the redirection of scholarly inquiry towards new directions.

The concept of women’s entrepreneurship is not monolithic but varies significantly across different cultural, economic, and social contexts. De Bruin et al. (2007) highlight the diversity in women’s entrepreneurship, noting that the motivations, challenges, and successes of women entrepreneurs can be vastly different depending on the geographic and socio-economic setting. Minniti and Naudé (2010) add that the complexity of women’s entrepreneurship is also influenced by the differing levels of support and barriers faced by women in various regions like limited market information, low levels of education and skills, and discrimination based on gender and ethnicity are the major barriers that IFE struggle with throughout their business lifecycle (Chiplunkar & Goldberg, 2021).

In recent years, there has been a discernible shift, and scholarly research is increasingly demonstrating the profound impact that innovation is exerting in this domain. Digital platforms have emerged as a critical tool for women entrepreneurs, facilitating market access and business management. Langowitz and Minniti (2007) discuss the impact of

technology on empowering women entrepreneurs, particularly in developing economies. Similarly, Coleman and Robb (2009) explore how online platforms have allowed women entrepreneurs to overcome traditional barriers and access new markets.

Despite the opportunities presented by technology, women entrepreneurs still face unique challenges. The work of Jamali (2009) reveals that women entrepreneurs often struggle with issues such as limited access to funding, societal stereotypes, and balancing work and family responsibilities. These challenges are echoed in the research of Carter et al. (2007), who argue that these barriers can significantly impact the growth and sustainability of women-owned businesses.

The complexity of women's entrepreneurship is further evidenced by its economic impact. Terjesen and Amorós (2010) examine the contribution of women entrepreneurs to economic development and job creation, highlighting the positive effects of supporting women in business. Brush et al. (2012) also emphasize the role of women entrepreneurs in innovating and driving economic growth in both developed and developing countries.

In conclusion, women's entrepreneurship, like food delivery, is a complex and evolving phenomenon. The diverse models and approaches within women's entrepreneurship contribute to its intricacy, making it a non-linear and dynamic field. From the existing literature, it is clear that women's entrepreneurship is not just about starting and running a business; it encompasses a broader spectrum of activities influenced by various socio-economic and cultural factors

Purpose of the paper. This study aims to highlight the importance of a holistic approach that considers the specificities of informal female entrepreneurship and the pivotal role of education in promoting a transition towards more formal and recognized entrepreneurial practices. The research hypothesis is predicated on the role of entrepreneurial education as crucial in providing women with the necessary tools to navigate and thrive in such complex contexts. The cornerstone of this research paper will be the detailed analysis of the case study based on the AWE program, aimed at outlining the dynamics of informal female entrepreneurship and the contribution of entrepreneurial education in facilitating the transition towards formalized and well-structured entrepreneurial activities. The research intends to offer a deeper understanding of how entrepreneurial training can act as a catalyst for the economic and entrepreneurial emancipation of women in contexts marked by complex challenges and opportunities. In summary, this study will contribute to the academic debate on female entrepreneurship and entrepreneurial education, offering practical insights for policies and programs aimed at supporting female entrepreneurs in contexts of high complexity.

RQ: How can entrepreneurial education influence the transition of informal female businesses towards their formalization in complex contexts?

Methodology. Through an exploratory qualitative analysis, this research seeks to analyze the case of the AWE (Academy for Women Entrepreneurs) program, particularly focusing on the edition held in Naples, an initiative dedicated to supporting female entrepreneurship through targeted educational pathways.

Through semi-structured interviews and narrative analysis, tools already employed in the literature on women's entrepreneurship (Garcia, 2013; Topimin et al., 2023), this study will explore the experiences of the participants and organizers of the course. The aim is to understand the type of support offered and the effect that this support has in addressing specific gaps previously dictated by complex starting situations and backgrounds.

The methodology section of this research paper will introduce a structured framework of questions designed to elicit detailed insights into the experiences of participants and organizers within the AWE program.

The interviews encompass a dual-layered approach. The first layer has already been conducted with the program's board in Naples. The second layer of interviews will take place subsequently and will be administered to the same students of the program in order to compare the initial outcomes with the subsequent feedback from the students of the Naples course. The inquiry will explore the diverse backgrounds of the participants and the envisioned development trajectories for their businesses, paying particular attention to the initial conditions and backgrounds that underscore the complexities of their originating contexts.

Identification of the questions of interviews are based on "complexity elements" based on the literature on complexity:

E.1 Social economic barriers (De Bruin, 2007) such as the need to carry out extra-entrepreneurial work to ensure the satisfaction of primary needs. This can limit the time and energy available to engage in entrepreneurial activity

E. 2 Cultural Barriers (Chiplunkar & Goldberg, 2021). Gender stereotypes, social expectations, and discrimination can negatively influence perceptions of women's entrepreneurial skills and limit access to business opportunities.

E. 3 Barriers to accessing support, mentoring, and advice (Minniti and Naudé, 2010). The lack of support networks, both formal and informal, and mentoring opportunities specifically geared toward women entrepreneurs can limit their access to advice, resources, and networking opportunities.

E. 4 Barriers to accessing credit (Jamali, 2009). Gender discrimination can lead to fewer opportunities to obtain loans, investments, or other forms of financial support.

E. 5 Level of knowledge and access to new technologies (Coleman and Robb, 2009). Lack of confidence in using Digital platforms and other technologies has emerged as a fundamental tool for women entrepreneurs that do not facilitate market access and business management.

This table encapsulates the primary questions that will be posed to the participants of the AWE course and the organizing body. The questions are linked to the respective five elements identified previously.

Tab. 1: Key Questions to pose to Learners and Members of the AWE Program in Naples

1. *Socio-economic Barriers: "How do your extra-entrepreneurial responsibilities, such as work to ensure basic needs, affect the time and energy you can dedicate to your entrepreneurial activities?"*
2. *Cultural Barriers: "In what ways have gender stereotypes, social expectations, or discrimination impacted your perception as an entrepreneur and access to business opportunities?"*
3. *Barriers to Accessing Support, Mentoring, and Advice: "Can you describe any challenges you've faced in finding support networks, formal or informal mentoring, and advice specifically geared towards women entrepreneurs?"*
4. *Barriers to Accessing Credit: "Have you experienced challenges in securing loans, investments, or other forms of financial support due to gender discrimination? Please share your experience."*
5. *What challenges have you encountered using digital platforms and new technologies for market access and business management?*

Results. *In the preliminary results, we introduce the main contents of the case study under examination.*

The Academy for Women Entrepreneurs (AWE) gives enterprising women the knowledge, networks and access they need to launch and scale successful businesses.

This program aims to support women in creating and developing entrepreneurial ventures by providing online and onsite training, mentorship, pitch competitions, and networking opportunities. Targeting women between the ages of 18 and 40, AWE emphasizes the importance of innovation and women entrepreneurship on the social or environmental impact of businesses, in alignment with the United Nations Sustainable Development Goals. The program's three primary objectives are: 1) To offer online educational resources and local support from U.S. exchange alumni, academics, and entrepreneurial leaders. 2) To foster partnerships and collaborations through mentoring, business contacts, and opportunities with Italian and U.S. enterprises. 3) To provide access to a network of Exchange Alumni and resources for women's economic empowerment.

The selection process of the Academy for Women Entrepreneurs consists of two phases: initially, aspiring entrepreneurs submit a written description and, if they wish, a video of their business project. Subsequently, an oral interview assesses the applicant's motivation, proficiency in English, digital skills, and the viability of the business idea. Candidates, who may apply individually or as a group, are selected based on the commitment and innovative and sustainable potential of their entrepreneurial proposals.

The primary and most significant aspects of the AWE program and its manifestation in the first Italian edition held in Naples, in collaboration with the University of Naples Federico II, are presented. These initial descriptive findings will be subsequently supported by the outcomes of interviews, which will be conducted as already described in the methodology section.

The Academy for Women Entrepreneurs (AWE) is an initiative of the U.S. Department of State managed in Italy by the University of Naples Federico II, where it also held its first edition.

Building upon the foundational description provided, the remainder of our results will be primarily derived from the responses obtained through interviews with AWE participants, complemented by insights from the program's organizational members. This qualitative data will illuminate the study in two critical areas:

Firstly, we will delve into which specific dimensions of complexity are perceived to be alleviated through the participants' engagement with the AWE educational pathway. This exploration aims to identify how the program's components - spanning online and onsite training, mentorship, and networking opportunities - might reduce the multifaceted challenges women entrepreneurs face.

Secondly, the research will assess the extent to which participation in the AWE program is seen as a catalyst in transitioning toward the formalization of business endeavors. By examining the participants' perceptions and experiences, this part of the study seeks to ascertain whether the AWE initiative effectively supports women in moving their entrepreneurial projects from the informal to the formal sector.

This structured inquiry is designed to offer a nuanced understanding of the impact of entrepreneurial education in fostering the growth and formalization of female-led enterprises, especially those emerging from complex and diverse backgrounds. Through this lens, we aim to contribute valuable insights into the effectiveness of initiatives like AWE in empowering women entrepreneurs and promoting sustainable economic development in line with the United Nations Sustainable Development Goals.

Research limitations. *In order to investigate how entrepreneurship education can influence the transition of informal women's businesses towards their formalization in complex contexts, this work analyzed participants in the AWE programme. Although this program is specific to this topic, it takes on a specific aspect also linked to an equally specific territory, where the course is carried out. The work could then be extended by analyzing participants from other similar programmes, in different contexts.*

Managerial implications. *Based on the initial dialogue with the scientific board and the preliminary questions that we posed to them we expect this research to highlight a series of factors linked to informal female entrepreneurship within the analyzed program, attributable to a generic scope of the topic. First of all, to highlight how many participants have never had entrepreneurial experience before. We expect that a substantial number of subjects will have had informal entrepreneurial experiences, which in some cases later became formal. The need for participating subjects to benefit from preparation underlying their activities will be underlined, showing that this could lead to positive impacts on activities*

already underway. We will also highlight the main barriers linked to entrepreneurship, which often discourage the transition from informal to formal: the weight of taxation and bureaucracy should push young entrepreneurs to want to experiment with the dynamics linked to an informal market first, taking on fewer risks on invested capital. Given the complex scenario in which the program participants operate, i.e. that of the South, there should be a lack of skills and competencies capable of exploiting the resources made available by the institutions to face the difficulties of these complex environments: a paradox given that bureaucracy and administrative complexities often prove to be the first obstacles to overcoming the difficulties of these markets. In this sense, the usefulness of programs such as AWE is therefore underlined, capable of allowing formal and informal female entrepreneurs to access resources specifically dedicated to them. As regards informal entrepreneurial activities, the program should develop the will to formalize these activities, seize a greater number of entrepreneurial opportunities, respect the development of a network of stakeholders, and above all respecting being able to receive resources, including economic ones, which can have a strong impact on the growth of their entrepreneurial realities, abandoning a dimension of informality in favor of recognized entrepreneurship

Originality of the paper. Several works have analyzed informal education and entrepreneurship, especially through university-type training courses. This work instead offers a more specific vision, focused on the transition from informal to formal entrepreneurship, through such a training course.

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Fostering Entrepreneurial Thinking: Analysing the Drivers and Impact of Entrepreneurship Education

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Abstract

This working paper examines the drivers and impacts of entrepreneurship education on fostering entrepreneurial thinking, focusing on its implementation and outcomes at the University of Turin. As the global economy shifts towards knowledge-based innovation, universities play a pivotal role in promoting entrepreneurship as a key driver for economic growth and sustainable development. The University of Turin exemplifies this transformation by offering programs that engage students in practical, experiential learning scenarios, thereby enhancing their entrepreneurial skills and intentions.

Through a comprehensive literature review, this ongoing study highlights the evolving role of universities in the entrepreneurship ecosystem, emphasizing the significance of entrepreneurship education in facilitating knowledge transfer, innovation, and societal well-being. Employing a unique dataset from the University of Turin, coupled with detailed questionnaires, the study adopts empirical analysis to investigate the effects of various factors—including individual student characteristics and pedagogical approaches—on entrepreneurial intentions and skill acquisition.

The initial findings reveal that while demographic factors such as gender and age have nuanced effects, the educational background, field of study, and pedagogical methods significantly influence students' entrepreneurial outcomes. Practical, hands-on learning experiences are shown to be particularly effective in enhancing entrepreneurial intentions and facilitating the transition from academic knowledge to real-world entrepreneurial engagement. Additionally, the university's entrepreneurial reputation and students' motivations emerge as crucial factors in the successful acquisition of entrepreneurial skills and competencies.

The paper concludes by advocating for a multi-dimensional pedagogical strategy that combines practical insights, motivational clarity, and exposure to real entrepreneurial challenges. This approach is essential for equipping students with the necessary skills and competencies, instilling the confidence and drive to pursue entrepreneurial ventures. The study underscores the importance of inclusive and integrative educational practices in cultivating the next generation of entrepreneurial leaders, contributing to economic growth and innovation. Through its analysis of the University of Turin's entrepreneurship education offerings, this paper offers valuable insights for educators, policymakers, and institutions aiming to foster a more entrepreneurial society.

Key words: *Entrepreneurship, entrepreneurship education*

Framing of the research. *The framework for ongoing research explores the complex interplay between entrepreneurship education and its effects on students' entrepreneurial intentions, activities, and skill acquisition. It emphasizes the crucial role of experiential learning and the influence of individual characteristics, pedagogical approaches, and the entrepreneurial ecosystem in shaping entrepreneurial outcomes.*

The literature review of this area sets a robust foundation, highlighting the evolution of universities into entrepreneurial entities that not only impart knowledge but also act as catalysts for economic development and innovation. The nexus of technology transfer and entrepreneurship underscores the shift towards open innovation and the strategic role of universities in the knowledge economy. Selecting the University of Turin, one of Italy's largest universities, stands out for its comprehensive array of entrepreneurship courses, the diverse backgrounds of its student body, and numerous entrepreneurial initiatives.

The inclusion of comprehensive datasets and descriptive analysis further enriches the study, offering a detailed understanding of the demographic, socio-economic, and educational backgrounds of the participants. This empirical foundation enables a thorough investigation of the variables influencing entrepreneurship education outcomes, providing a solid basis for the econometric analysis.

The ongoing study's focus on the symbiosis between entrepreneurship education and entrepreneurial intention is particularly insightful. It highlights the significant role of education in shaping students' entrepreneurial mindsets and

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intentions, emphasizing the importance of fostering an entrepreneurial culture within the educational ecosystem. The exploration of the distinctiveness of the study, through its focus on psychological, demographic, and educational factors, adds a unique dimension to the research, promising to contribute significantly to the field of entrepreneurship education.

The diverse program description and dataset elucidation provide a clear understanding of the research scope and the specific areas of focus, laying the groundwork for a comprehensive analysis of the impact of entrepreneurship education in the academic environment. This approach not only highlights the institution's role in nurturing future entrepreneurs, but it can also help to create a model for assessing the effectiveness of entrepreneurship education programs.

By integrating theoretical perspectives with empirical evidence, this study promises to contribute significantly to the understanding of how entrepreneurship education can be optimized to support economic growth and innovation, making it a valuable addition to the fields of entrepreneurship, education, and policy development.

The methodological approach, employing an empirical approach by using students' responses and regression analysis—multiple linear regression and logistic regression—allows to get insights on the factors influencing students' entrepreneurial intentions and future entrepreneurship pursuits, as well as to understand the effectiveness of different pedagogical methods.

Purpose of the paper. Moving beyond the conventional emphasis on personal traits, this study expands the analysis to incorporate psychological and demographic factors, thereby providing a richer understanding of the forces driving entrepreneurial aspirations. A novel aspect of our research is the focus on the role of educational programs in enhancing students' entrepreneurial skills, a critical area that has not been sufficiently explored in previous studies.

Adopting a holistic approach, the research evaluates not only the inclination of students towards entrepreneurship but also the interplay of subjective characteristics and personal factors in influencing their entrepreneurial ambitions. This includes examining the significance of educational experiences in equipping students with the skills essential for successful entrepreneurship and evaluating the impact of environmental factors, such as gender and family background, on the efficacy of entrepreneurship education.

The paper further aims to offer a long-term perspective on the outcomes of entrepreneurship education by analysing actual entrepreneurial endeavours undertaken by students' post-education. Through the examination of the entrepreneurship courses at the University of Turin, the study provides valuable insights into the local entrepreneurial ecosystem, underscoring the importance of this research within the context of Italy's academic and entrepreneurial sectors.

Key inquiries addressed in this paper include:

1. The impact of individual characteristics on students' entrepreneurial intentions.
2. The contribution of entrepreneurship education to students' engagement in entrepreneurial activities.
3. The effectiveness of various teaching methods employed in entrepreneurship courses in fostering an entrepreneurial culture.
4. The identification of skills acquired through these courses that prove beneficial for students in their future entrepreneurial pursuits.

Methodology. The ongoing research paper employed data collected based on the questionnaires sent to a total population of 1550 students of which a representative sample of 223 responses was successfully obtained for the empirical analysis of our dataset. The questionnaires employed in this analysis were designed to encompass a wide array of data, (including personal information, educational background, disciplinary specializations, career aspirations, entrepreneurial intentions, acquired skills, entrepreneurial experiences, training received, and university evaluations), following the existing literature addressing entrepreneurial intentions and skills (Hahn et al., 2020; Leung et al., 2012; Hahn et al., 2020).

Additionally, the questionnaire was customized to specifically target students who had completed entrepreneurship training several years prior, encompassing inquiries into whether specific educational backgrounds or individual characteristics correlate with a stronger inclination towards entrepreneurship pursuit.

In our effort to derive meaningful insights from the amassed questionnaire data, we have employed a robust analytical framework leveraging two distinct statistical methodologies: multiple linear regression and logistic regression. This is to delve deeper into the interplay of variables and enhance our capacity for data-driven predictions. We aim to use these statistical tools to shed light on the research questions highlighted in the section of purpose of the paper.

Results. The analysis of questionnaires from the entrepreneurship education programs at the University of Turin uncovers several key insights into student engagement, backgrounds, motivations, and perceptions regarding these courses.

The descriptive findings shows that the DI course, serving as a cornerstone of theoretical entrepreneurship education, has demonstrated its capacity to attract a substantial number of students, indicative of its foundational role and broad appeal. In contrast, the more hands-on SCL and Clab courses, despite their lower enrollment numbers, underscore a distinct student preference for practical, experiential learning, limited by their capacity and entry requirements.

Demographically, the entrepreneurship programs have drawn a diverse cohort of students, spanned a wide age range and included equal genders representation. This diversity reflects the university's capacity to appeal to a broad audience, from undergraduates to postgraduates and professionals, suggesting a widespread interest in entrepreneurship across various stages of educational and professional development.

The study also delves into the socio-economic and familial backgrounds of the students, offering insights into how entrepreneurship education might level the playing field for aspiring entrepreneurs from diverse backgrounds. Despite

the mixed evidence on the impact of family entrepreneurial backgrounds on students' intentions, the data suggests that such education can empower students from all walks of life to explore and engage in entrepreneurial endeavors.

Furthermore, the wide academic diversity among students enrolled in entrepreneurship courses highlights the University of Turin's success in fostering an entrepreneurial mindset across different fields of study. The inclusion of students with prior work experience underscores the proactive nature of these individuals towards entrepreneurship, reflecting the program's role in nurturing entrepreneurial ambitions.

Students' motivations for enrolling in entrepreneurship courses are primarily driven by the desire to acquire practical skills and knowledge, as well as aspirations towards self-employment and autonomy. This indicates that students view these courses as essential stepping stones towards achieving their entrepreneurial ambitions, rather than mere academic exercises.

The assessment of students' entrepreneurial behavior and career aspirations has revealed a strong inclination towards self-employment and entrepreneurial activities. Such findings suggest the effectiveness of the courses in instilling entrepreneurial aspirations and equipping students with the mindset and skills necessary for entrepreneurial success.

Student feedback on the courses has been overwhelmingly positive, particularly praising their interdisciplinary approach, practical insights, and exposure to real-world scenarios. However, the demand for more interactive and practical components within the curriculum points to areas for potential enhancement, ensuring that the programs continue to meet the evolving needs of aspiring entrepreneurs effectively.

Lastly, the findings of the questionnaires show the generally positive perceptions of the university's entrepreneurial ecosystem by the students highlight a supportive environment for entrepreneurship education in the university. Nonetheless, opportunities for further development, especially in external collaboration and international partnerships, could further solidify the University of Turin's reputation as a leader in the field of entrepreneurship education.

The preliminary results derived from our initial regression delve into the intricacies of how various factors influence students' journey through entrepreneurship education, from the initial formation of entrepreneurial intentions to post-training entrepreneurial activities, and ultimately, the acquisition of crucial skills and competencies. Each phase of the regression analysis uncovers preliminary insights into the dynamic interplay between a multitude of influencing variables, providing an early look at the potential pathways through which entrepreneurship education moulds student outcomes.

The first stage of our regression analysis lays the groundwork by examining an expansive set of variables and their influence on students' entrepreneurial intentions. This initial model integrates a wide range of factors, encompassing socio-demographic variables, academic and work experiences, and extends to explore students' motivations for enrolling in entrepreneurship programs. In the exploration into what shapes students' entrepreneurial intentions, our initial analysis reveals that while traditional demographic factors like gender, age, and family background have a role, their impact is subtle. We notice that the educational factors and experiential variables significantly elevate the model's explanatory power, underscoring the critical influence of academic preparation and personal motivations on fostering entrepreneurial mindsets.

Interestingly, parental entrepreneurship does not wield the expected influence, suggesting a departure from the assumed legacy effect in entrepreneurial inclination. Hence, the preliminary nature of these results highlights the complexity of entrepreneurial intention formation, suggesting that both inherent personal traits and the acquired experiences from education contribute significantly to shaping students' entrepreneurial aspirations.

Our second regression model provides early insights into the relatively underexplored area of post-training entrepreneurial activities. Post-training entrepreneurial activities are less about demographic specifics and more about the complex interplay of educational experiences, field of study, and practical exposure. The initial findings suggest that attributes such as the level of education and specific learning experiences within entrepreneurship programs play decisive roles. Practical, hands-on pedagogical methods notably outshine purely theoretical ones in fostering the transition from intention to actual entrepreneurial engagement. The comparison between theoretical and practical approaches reveals a definitive lean towards the efficacy of experiential learning. Practical courses significantly bolster students' likelihood to pursue entrepreneurship, offering tangible skills and real-world insights that theoretical courses cannot match in isolation. This emphasizes the necessity of integrating practical experiences into entrepreneurship education to bridge the gap between academic knowledge and entrepreneurial action.

Our third regression analysis addresses a notable gap in existing literature by focusing on the acquisition of skills and competencies through entrepreneurship education. This initial exploration is particularly important for its emphasis on a critical yet often overlooked aspect of entrepreneurship education—its effectiveness in equipping students with the necessary skills for entrepreneurial success. The determination of acquired skills and competencies underscores a complex interaction between individual characteristics and educational contexts. While gender and educational background exhibit some influence, the broader educational environment, and motivations for engaging in entrepreneurship education emerge as powerful drivers. The significance of the university's entrepreneurial reputation and the targeted motivations for learning new skills highlight the importance of an encouraging, resource-rich educational ecosystem in enhancing skill acquisition. These early insights underscore the importance of a supportive and resource-rich educational environment, as reflected in the perceived reputation of the university, in enhancing the educational outcomes of entrepreneurship programs.

Collectively, these initial regression analyses offer a valuable glimpse into the potential effects of entrepreneurship education on various student outcomes. By presenting these findings as preliminary, we acknowledge the exploratory

nature of our analysis and the need for further research to validate and deepen our understanding of these complex dynamics. These early results serve as a foundation for future investigations into the roles that individual characteristics, educational experiences, and motivational factors play in the broader landscape of entrepreneurship education.

Across all analyses, a common theme emerges entrepreneurship education's effectiveness hinges not solely on imparting knowledge but on creating an integrative learning experience that combines practical insights, motivational clarity, and exposure to real entrepreneurial challenges. This holistic approach not only equips students with the necessary skills and competencies but also instils the confidence and drive to translate entrepreneurial intentions into tangible ventures. The initial findings collectively advocate for detailed understanding of the entrepreneurship education landscape, urging educators, policymakers, and institutions to adopt a multi-dimensional pedagogical strategy that resonates with diverse student aspirations and learning styles.

Research limitations. The study acknowledges certain limitations, including the reliance on self-reported data, which may introduce biases. The specific focus on the University of Turin also limits the generalizability of the findings across different institutional and cultural contexts. Furthermore, the evolving nature of entrepreneurship education and the external economic and social factors influencing entrepreneurial intentions and activities necessitate continuous research in this field.

Managerial implications. The initial findings highlight the importance of integrating practical and experiential learning in entrepreneurship education at the University of Turin, underscoring the potential for such approaches to significantly improve entrepreneurial intentions and activities among students. The findings seem to also suggest that university administrators and educators should focus on tailoring entrepreneurship programs to the diverse needs of students, leveraging the institution's reputation to enhance the effectiveness of these programs. By emphasizing hands-on, real-world experiences and aligning educational offerings with the motivations and backgrounds of students, universities can foster a more robust and inclusive entrepreneurial ecosystem. This approach not only promises to elevate the quality and impact of entrepreneurship education but also serves as a strategic guide for enhancing entrepreneurship skills within the educational domain.

Originality of the paper. The originality of this paper is anchored in its comprehensive examination of the impact of entrepreneurship education, extending beyond entrepreneurial intentions to encompass actual entrepreneurial actions post-training. This exploration not only bridges a notable gap within existing literature but also enriches the dialogue around the practical outcomes of entrepreneurship education. A distinguishing aspect of this research is its investigation into the impact of different teaching approaches, highlighting how varied pedagogical strategies influence skill acquisition and entrepreneurial engagement. Additionally, the study innovatively identifies specific individual characteristics that amplify the effectiveness of entrepreneurial education, offering insights into personalized educational experiences. This dual focus on the tangible outcomes of entrepreneurship education and the interplay of personal attributes and pedagogical methods provides a robust framework for designing more impactful educational programs. Consequently, the paper offers a new perspective on optimizing entrepreneurship education to foster not only intention but also action within the entrepreneurial domain, presenting a complex exploration of the mechanisms through which education catalyses real-world entrepreneurial success.

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Students' entrepreneurial intentions among personal and contextual factors: a pilot study exploring the role of emotions.

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Abstract

This study explores the relationship between students' entrepreneurial intentions, well-being, future career anxiety, entrepreneurial education, and entrepreneurial networks.

The literature addressing the antecedents of students' entrepreneurial intentions has already demonstrated the importance of combining both personal and contextual factor. However, among personal factors, emotions have received less attention compared to cognitive factors. Emotions affect how individuals process information and therefore positive and negative emotions have a different effect on decision-making. Well-being, as a positive state of mind, has long been considered as an outcome of entrepreneurship, and the few studies addressing the role of well-being as antecedent of entrepreneurial intentions have led to conflicting results. The literature dealing with the role of negative emotions, such as anxiety, is more limited, and has also provided mixed results. In sum, there is a need to better investigate the role of positive and negative emotions on students' entrepreneurial intentions.

This pilot study aims to address these gaps by investigating the relations between well-being, future career anxiety, educational and social factors, and students' entrepreneurial intentions.

The research involved an online survey administered to a sample of 174 Italian university students. Results reveal the following: future career anxiety predicts entrepreneurial intentions, while well-being does not. Educational and social factors are both strong antecedents of students' entrepreneurial intentions.

These findings shed light on the complex interplay between entrepreneurial intentions, emotions, educational and social factors among university students, providing valuable insights for further research and practical implications for entrepreneurship education and promotion.

Key words: *Entrepreneurial intentions; emotions; well-being; future career anxiety; entrepreneurial networks; entrepreneurial education.*

Framing of the research. *Entrepreneurial intentions (EI) are probably the most significant predictor of entrepreneurial activities and behaviors (Krueger et al., 2000). Given the pivotal role of entrepreneurship for economy and innovation (Barba-Sánchez et al., 2022), scholars have long since begun to study the factors that lead individuals to become entrepreneurs and how their intentions to start or own a business are formed (Krueger et al., 2000). Within this stream of research, consistent attention has been paid to students (Lüthje and Franke, 2003; Zhao et al., 2005; Souitaris et al., 2007; Kuckertz and Wagner, 2010; Wagner, 2012; Krueger et al., 2000; Barba-Sánchez et al., 2022; Maheshwari et al., 2023).*

A recent review of the literature (Maheshwari et al., 2023) has categorized seven main determinants of students' EI, namely cognitive, personality, environmental, social, educational, contextual, and demographic factors. The review also highlighted the dominant role of cognitive factors within this stream of research.

Entrepreneurship, however, is a “highly emotional journey where the heart as well as the mind plays a central role” (Nikolaev et al., 2019, p. 451). Although the role of emotions in enhancing EI has long been neglected by entrepreneurship research (Foo, 2011), more recently scholars have started paying more attention to affect, moods, emotions, and dispositions (Nikolaev et al., 2019). This stream of literature argues that emotions must be incorporated into the factors

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affecting EI, because affects and cognition are interrelated (Delgado García et al., 2015). Emotions, both positive and negative, influence decision-making because they influence how individuals process information (Foo, 2011; Chen et al., 2021; Podoyntsyna et al., 2012). For example, in entrepreneurship context, emotions are often associated to risk perceptions. Individuals with positive emotions are more optimistic, and positive emotions can lead individuals to make more positive evaluations of a situation and to take more risks (Foo, 2011), while individuals with negative emotions are more likely to favor pessimistic evaluations and judgments, thereby avoiding risks (Chen et al., 2021; Foo, 2011).

Previous research has demonstrated the usefulness of integrating both contextual and personal factors to investigate the broad range of antecedents that influence entrepreneurial intentions, (Lüthje and Franke, 2003; Nabi et al., 2010; Sesen, 2013; Mustafa et al., 2016). The Lüthje and Franke model (LFM) developed by Lüthje and Franke in 2003 (Maheshwari et al., 2023) argues that both personality traits, such as risk propensity and internal locus of control, and contextual factors, such as perceived barriers and support to entrepreneurship, impact students' entrepreneurial intentions. Similarly, the studies by Sesen (2013) and Mustafa et al. (2016) provide evidence that both personality and environment impact students' entrepreneurial intentions. However, these studies have not considered the role of positive and negative moods and emotions within personality factors. Therefore, this study explores the relationship between students' entrepreneurial intentions, well-being, anxiety, entrepreneurial networks, and entrepreneurial education.

The first factor analyzed in this research is well-being. Psychological well-being describes individuals' positive emotions about their overall human functioning (Aldwin and Revenson 1987). In other words, well-being is defined as a positive state which includes emotions such as happiness, optimism, and vitality (Longo et al., 2017; 2018).

Researchers in entrepreneurial studies are increasingly interested in the psychological well-being of entrepreneurs (Ryff, 2019), however, entrepreneurship literature has often considered well-being as a dependent variable (Ryff, 2019; Margaça et al., 2021), and Wiklund et al. (2019, p. 582) defined entrepreneurial well-being as "the experiences of satisfaction, positive affect, infrequent negative affect, and psychological function in relation to the development, start-up, growth, and management of an entrepreneurial venture". In other words, happiness and well-being are a consequence of entrepreneurial activity.

Well-being is an important entrepreneurial outcome, but at the same time, scholars (Margaça et al., 2021; Wiklund et al., 2019) argue that it may also influence the decision to become entrepreneur. Positive emotions significantly impact individual creativity (Baas et al., 2008), problem solving, and innovation (Rhee, 2006; Yuan and Wu, 2020). Moreover, positive emotions can affect the interpretation of ambiguous situation in a positive direction and lead individuals to overestimate the probabilities of positive outcome and to take more risks (Pérez-Fernández et al., 2020; Foo, 2011). Indeed, research has found that positive moods and emotions, such as optimism, are positively related to students' entrepreneurial intentions (Hernández-Sánchez et al., 2020).

Previous research dealing with entrepreneurship and well-being has noted that well-being can be the antecedent of several important work-related outcomes, such as: productivity (Donald et al., 2005), creativity (Baron and Tang, 2011) and cooperation in the workplace (De Neve et al., 2013).

However, the limited research investigating well-being as a driver of EI has found conflicting results. Some studies have found that students' well-being positively influences their entrepreneurial intentions (Routledge et al., 2021; Sahrah et al., 2023). However, other research has revealed that subjective well-being only indirectly affects entrepreneurial intentions (Contreras-Barraza et al., 2022) or that psychological well-being mediates the relation for female but not for male (Margaça et al., 2021). In addition, other studies found insignificant (Chen et al., 2021) or even negative (Zhang et al., 2015) relations between well-being and entrepreneurial intentions. In this regard, the work by Foo and colleagues has showed that sometimes it is the lack of well-being to enhance the decision to start a business (Foo, 2011; Foo et al., 2009). Similarly, Nikolaev et al. (2019) found that individuals with positive moods and emotions generally do not want to change their life and to enter risky situations.

The second factor analyzed in this research is future career anxiety. Anxiety is defined as a state of mental feeling of tension and worries about the future (Banerjee, 2020). Anxiety is identified as a negative emotion, which lessen intentions to carry out a specific action in several types of behavior, because general fear and anxiety can determine self-efficacy reduction (Arora et al., 2021) and insecure and anxious individuals are generally more uncertain of their ability to address threats (Zelekha et al., 2018).

Previous research has indicated that anxiety influences career development and plays a crucial role in career decision making (Chang, 2011; Tsai et al., 2017). For example, Meredith et al. (2007) found that anxious individuals choose careers mainly on salary criteria, even though this may cause them to experience lower career satisfaction.

As Baron (2008) highlighted, entrepreneurs often navigate environments marked by complexity and uncertainty, which can predispose individuals to negative emotions that tend to promote pessimistic evaluations and risk avoidance (Foo, 2011). Furthermore, these negative emotions can impede the identification and exploitation of business opportunities (Shepherd et al., 2015; Doanh et al., 2021). Consequently, it is possible to argue that future career anxiety may also influence students' entrepreneurial intentions. In the literature, few studies have focused on perceptions derived from an unsafe, dangerous, and risky environment, and the impact these perceptions can have on the intention of starting a business (Hernández-Sánchez et al., 2020).

Pérez-Fernández et al., (2020) found that negative affective traits negatively influence attitudes towards entrepreneurship, however they do not include intentions in their analysis. Zelekha et al. (2018) found that the less anxious an individual is, the more entrepreneurial tendencies he will express. More recently, anxiety and fear have been studied in relation to the Covid -19 pandemic. Mahmud et al. (2020) found that due to the outbreak of pandemic people are

becoming depressed and anxious about their future career. Doanh et al., (2021) found that the fear and anxiety of Covid-19 can reduce entrepreneurial self-efficacy, entrepreneurial intention, and entrepreneurial behavior.

However, other research has found insignificant relations between future career anxiety and students' entrepreneurial intentions (Baratta et al., 2021), and some studies have found that anxiety can even enhance the intention to start a business. In this sense, anxiety can be associated with heightened perception and alertness that can activate people to engage in reward-seeking behavior (Kashdan and Biswas-Diener, 2014). Nikolaev et al. (2019) found that individuals who are high on negative dispositional affect are more likely to engage in entrepreneurial action. In this sense, entrepreneurship can be potentially appealing for people who want to change their life for the better, even entering risky situations. More recently, Bhardwaj (2024) found that both positive emotions and fear of failure determine entrepreneurial intentions.

In sum, research investigating the role of emotions as a driver of EI is still limited. Scholars (e.g., Wiklund et al., 2019; Margaça et al., 2021; Chen et al., 2021) call for more study on the antecedents and consequences of entrepreneurship related to positive emotions, such as well-being. Moreover, most of entrepreneurship literature to date has focused on positive emotions, largely ignoring the negative ones (Nikolaev et al., 2019). The limited research on fear and anxiety have also provided mixed results, and scholars (e.g., Chen et al., 2021; Nikolaev et al., 2019) argue that combining positive and negative feelings will better reflect the influence of emotional factors on EI.

Given the usefulness of combining both personal and contextual factors (Lüthje and Franke, 2003), the current research also investigates the role of educational and social factors. Contextual factors, such as perceived social and institutional support, family characteristics and expectations, network ties, perceived barriers to entrepreneurship (Steele, 2004; Lüthje and Franke, 2003; Liñán and Fayolle, 2015), as well as the level and quality of education and training on business, job placement and entrepreneurship (Zhao et al., 2005; Baum et al., 2007; Soiutaris et al., 2007; Kuckertz and Wagner, 2010) have long been studied as antecedents of students' EI.

The third factor analyzed in this research is entrepreneurial education. Although some studies found weak or insignificant relations (Sesen, 2013; Mustafa et al., 2016) between university environment and entrepreneurial intentions, previous research has nevertheless emphasized the role of entrepreneurial education and training because entrepreneurial education can enhance both entrepreneurial knowledge and skills (Brüne and Lutz, 2020). Moreover, individuals that received formal learning on entrepreneurship in their academic activities are generally given the opportunity to observe successful business models, they are exposed entrepreneurs' lectures and case studies, and therefore are expected to display higher levels of entrepreneurial self-efficacy (Zhao et al., 2005).

The fourth factor analyzed in this research is entrepreneurial networks. Social factors play a significant role in fostering students' entrepreneurial intentions. Although some research indicated that social networks are less significant than personality factors in affecting entrepreneurial intentions (Sesen, 2013), nevertheless involvement in and exposure to entrepreneurial networks, whether through familial connections or acquaintances, are recognized as crucial antecedents to entrepreneurship (Maheshwari et al., 2023). In this context, the family's influence has been underscored in various studies. Notably, students hailing from entrepreneurial backgrounds and with prior family exposure to entrepreneurship generally exhibit heightened intentions towards entrepreneurship (Carr and Sequeira 2007; Liñán and Fayolle, 2015).

Purpose of the paper. Given the aforementioned literature, this pilot study explores the relationship between students' entrepreneurial intentions, well-being, future career anxiety, entrepreneurial networks, and entrepreneurial education. By doing so, the study aims to add to current literature on entrepreneurial intentions by combining both personal and contextual antecedents of entrepreneurial intentions (Lüthje and Franke, 2003). Moreover, this study aims to fill a gap in the literature by incorporating the role of both positive and negative emotions as personal factors (Nikolaev et al., 2019). Specifically, the aim of the study is to test the following hypotheses:

- H1: Students' positive emotions, such as well-being, are related to entrepreneurial intentions.
- H2: Students' negative emotions, such as future career anxiety, are related to entrepreneurial intentions.
- H3: Students' education on entrepreneurship is positively related to entrepreneurial intentions.
- H4: Students' entrepreneurial networks are positively related to entrepreneurial intentions.

Methodology. To test the research hypotheses, an online survey was developed.

Entrepreneurial intentions were measured using a 6 items scale (My professional goal is to become an entrepreneur), similar to the operationalization of Lüthje and Franke (2003) and Kuckertz and Wagner (2010). The scale possesses excellent internal reliability and Cronbach's $\alpha = .96$.

Well-being was assessed using the short version of the Scale of General Well-being (Longo et al., 2017; 2018). The scale comprises 14 items, namely: happiness, vitality, calmness, optimism, involvement, self-awareness, self-acceptance, self-worth, competence, development, purpose, significance, congruence, and connection. The scale display excellent internal reliability as Cronbach's $\alpha = .90$.

Future career anxiety was measured using a 5 items scale originally developed by Tsai et al., (2017) in order to assess students' future career anxiety (I worry about future employment because of a potential economic recession). Internal reliability is excellent and Cronbach's $\alpha = .94$.

Entrepreneurial education was measured with 2 items, dealing with the level of training and education received during the study path. Cronbach's $\alpha = .72$, which is lower but still acceptable (Nunnally, 1978).

Entrepreneurial networks were assessed as a dummy variable, with 1 indicating the presence of entrepreneurs in students' social network (family and friends), and 0 indicating the absence of entrepreneurs in students' social network (family and friends).

All questions, except for entrepreneurial networks, were assessed using a 5-point Likert scale ranging from 1 – strongly disagree to 5 – strongly agree.

The pilot sample includes 174 Italian students. The majority of respondents are female (94%), the average age is 23; 58% are undergraduate students, while 42% are graduate students; 48% are working students.

Results. Descriptive statistics are reported in Table 1. Students' EI are quite low on average, as well as EDU. However, it is important to mention that the majority of surveyed students do not attend Business and Economics courses. Students' WB is quite high, and higher than FCA. Half of the sample belongs to an entrepreneurial network (family or friends).

Table 1. Descriptive statistics

	Mean	SD
EI	2.07	1.02
WB	3.39	.63
FCA	2.76	1.14
EDU	1.96	.89
	N	Frequency
Net	87	50%

The correlation matrix (Table 2) shows that EI are positively correlated with FCA, EDU and Net. Notably, WB and EI are not correlated.

Table 2. Correlation matrix

	EI	WB	FCA	EDU	Net
EI	1				
WB	0.051	1			
FCA	0.183*	-0.134	1		
EDU	0.566**	0.038	0.14*	1	
Net	0.258**	0.107	-0.084	0.165*	1

Note: * $p > 0.01$; ** $p > 0.001$

To better assess the role of entrepreneurial ties, an independent samples *t* test was conducted (Table 3). The sample was divided into two subsamples based on the presence of entrepreneurs in students' social networks (= 1, 50%). Results show that students belonging to entrepreneurial networks display higher EI and more EDU.

Table 3. *T* test on entrepreneurial networks

	Group	Mean	Std. Deviation	S.E. Mean	Sig. (2-tailed)	
EI	1	2.33	1.11	0.12	0.001	
	0	1.81	0.86	0.09		
WB	1	3.46	0.62	0.07	0.161	
	0	3.32	0.65	0.07		
FCA	1	2.66	1.13	0.12	0.270	
	0	2.85	1.14	0.12		
EDU	1	2.1	0.95	0.1	0.030	
	0	1.81	0.81	0.09		

Then an independent samples *t* test on students' EI was conducted (Table 4). The sample was divided into two subsamples based on EI. As the mean value of EI = 2.07 and the median value = 1.82, the cutoff was set = 2. Results show that students with higher EI (≥ 2 , 46%) display more EDU, more FCA and more Net. WB does not show significant differences in means.

Table 4. T test on entrepreneurial intentions

	Group	Mean	Std. Deviation	S.E. Mean	Sig. (2-tailed)
WB	≥ 2.00	3.35	0.62	0.07	0.394
	< 2.00	3.43	0.65	0.07	
FCA	≥ 2.00	3.01	1.11	0.12	0.006
	< 2.00	2.54	1.12	0.12	
EDU	≥ 2.00	2.42	0.91	0.1	0
	< 2.00	1.56	0.66	0.07	
Net	≥ 2.00	0.59	0.5	0.06	0.033
	< 2.00	0.43	0.5	0.05	

In order to test the research hypothesis, a multiple regression was conducted. This method allows to analyze the simultaneous influence of independent variables, considered predictors, on a dependent variable (Hair, 2011). As reported in Table 5, results show that FCA, EDU and Net significantly affects students' EI. WB displays an insignificant relation. These results confirm H2, H3 and H4, while H1 is not supported.

Table 5. Multiple regression on entrepreneurial intentions

Variable	t	Sig.
(Constant)	0.59	0.557
WB	0.48	0.632
FCA	2.07	0.004
EDU	8.20	0.000
Net	2.88	0.005

Note: R = 60, R2 = 0.36, adj. R2 = 0.35

Research limitations. This pilot study constitutes only a part of a broader and continuously evolving research project. The main limitations of the current study pertain to its sample size and composition. For instance, the sample predominantly comprises female students, with an absence of representation from business and economics disciplines, among other factors. Additionally, this research solely delves into the examination of specific factors' influence on EI, yet the literature indicates the existence of numerous other variables that have an impact on the decision to start a business.

Managerial implications. Given the pivotal role of entrepreneurship in fostering economic growth, driving innovation, and enriching society (Barba-Sánchez et al., 2022), it is imperative to cultivate entrepreneurial activities and enhance students' EI. The findings of this research provide practical implications for entrepreneurship education and promotion.

- Enhance formal learning and education on entrepreneurship. Incorporating entrepreneurship education into the curriculum could be beneficial, as it can equip students with the necessary knowledge and skills to pursue entrepreneurial ventures. This could involve offering courses, workshops, or mentorship programs aimed at fostering entrepreneurial mindsets and abilities.
- Facilitating networking opportunities for students within entrepreneurial communities or among successful entrepreneurs could help cultivate supportive social networks conducive to entrepreneurial endeavors. This could involve organizing networking events, guest speaker sessions, or alumni mentorship programs.
- Recognizing the positive relationship between anxiety and entrepreneurial intentions suggests that anxiety itself may not necessarily be a barrier to entrepreneurship but rather a potential catalyst for motivation and action. By addressing anxiety and providing appropriate support mechanisms, educators and support organizations can help students harness this energy and leverage it to pursue their entrepreneurial goals more effectively.

Originality of the paper. This research shed light on the complex interplay between entrepreneurial intentions, positive and negative emotions such as well-being and anxiety, and contextual factor, such as education and social networks. In doing so, this study contributes to existing research on entrepreneurial intentions in two ways:

- First, it supports the relevance of combining both personal and contextual factors (Lüthje and Franke, 2003). Contrary to previous research (Sesen, 2013; Mustafa et al., 2016) however, our findings demonstrate that contextual factors have a stronger impact than personal ones in enhancing students' intentions to start a business.
- Second, this study incorporates the role of emotions within personal factors. While previous studies have primarily concentrated on positive emotions (Chen et al., 2021; Nikolaev et al., 2019), this research broadens the scope by analyzing the concurrent impact of both positive and negative emotions on students' entrepreneurial intention. By including negative emotions such as future career anxiety, this study aims to provide a more nuanced understanding of the emotional landscape influencing entrepreneurial aspirations.

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Social Entrepreneurship and Sustainability. How can challenge-based learning impact students' entrepreneurial skills and challenge providers' problems?

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Abstract

The Department of Economics and Management of the University of Trento offers a master's Course, Sustainability and Social Entrepreneurship, which focuses on hybrid and sustainable companies and aims to transfer the ability to examine opportunities and challenges for promoting corporate and nonprofit/hybrid corporate responsibility and sustainability. The 48-hour Course (8 ECTS) aims to impart knowledge, skills, competencies, approaches, and techniques specific to social impact business design. It also seeks to understand current challenges, trends, and future scenarios in sustainability, innovation, and social entrepreneurship, as well as the main business models available for creating social impact. It is a challenge-based and hands-on course that includes developing a project idea and a social business model to be presented at the end of the Course, starting from challenges launched by the so-called challenge providers in the Trentino territory (such as organizations, cooperatives, and associations). By immersing themselves in the challenges, the students respond to concrete problems, presenting innovative and sustainable solutions at the end of the Course. The purpose of the paper is to understand how an educational initiative such as this Course impacts in two ways: one way is the educational learning, by increasing students' entrepreneurial and innovation skills, and on the other way, how it can have an impact on challenge providers. To evaluate the impact of the challenge from the perspective of students, the research collects data through EntreComp, the European Framework survey concerning entrepreneurial skills. The survey is submitted to students at the beginning and end of the Course. The research also collects data from the reflective tools. To evaluate the impact of the challenges from the perspective of the challenge providers, the research collects data from semi-structured interviews. Preliminary results gathered from the EntreComp and the reflective tools show that students increase their entrepreneurial skills such as, among others, the identification of opportunities, creativity, the capacity to mobilize teammates, problem-solving, and communication skills. From the challenge providers' perspective, this Course represents an opportunity to acquire new ideas and solutions, recruit young talents, and gain knowledge and competencies.

Key words: *social entrepreneurship; sustainability; challenge-based learning; social innovation; social economy; higher education*

Framing of the research. *The Department of Economics and Management of the University of Trento offers a master's Course, Sustainability and Social Entrepreneurship, which focuses on hybrid and sustainable companies and aims to transfer the ability to examine opportunities and challenges for promoting corporate and nonprofit/hybrid corporate responsibility and sustainability. The 48-hour Course (8 ECTS) aims to impart knowledge, skills, competencies, approaches, and techniques specific to social impact business design. It also seeks to understand current challenges, trends, and future scenarios in sustainability, innovation, and social entrepreneurship, as well as the main business models available for creating social impact. Through developing knowledge related to social entrepreneurship and third-sector management, the Course aims to analyze the spaces, tools, and opportunities for the strategic development of Third Sector organizations, the cooperative world, nonprofit companies, and B-Corp, focusing on new forms of social innovation.*

It is a challenge-based and hands-on course that includes developing a project idea and a social business model to be presented at the end of the Course, starting from challenges launched by entities, the so-called challenge providers in the Trentino territory (such as organizations, cooperatives, and associations). By immersing themselves in the challenges, the students respond to concrete problems, presenting innovative and sustainable solutions at the end of the Course.

The Course aims to stimulate transversal skills, which are also the 15 entrepreneurial skills outlined by EntreComp, the European framework, divided into three macro areas: the ability to identify ideas and opportunities, knowing how to mobilize helpful resources to solve problems and generate solutions, and finally knowing how to manage a project.

At the end of the Course, students should be able to:

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- Understand the general concepts related to sustainability, innovation, and social entrepreneurship;
- Identify and describe the main models of social entrepreneurship and social innovation;
- Recognize the main managerial approaches to transform social entrepreneurial opportunities into business models and to develop socially innovative ideas and solutions;
- Analyze and evaluate how social entrepreneurship and social innovation enable sustainability and how social entrepreneurs can act as change agents;
- Analyze the needs and funding sources for social entrepreneurship and social innovation;
- Analyze a problem, putting it in context, identifying key stakeholders, and understanding customer/user needs;
- Generate innovative and sustainable social impact solutions;
- Understand social impact design, measurement, and evaluation;
- Present a pitch in front of an audience consisting of faculty, investors, and Third Sector organizations.

Purpose of the paper. *The purpose of the paper is to understand how an educational initiative such as this Course impacts in two ways: one way is the educational learning, by increasing students' entrepreneurial and innovation skills, and on the other way, how it can have an impact on challenge providers. The challenge-based approach applied to real problems can lead to change by substantially impacting companies and organizations that offer challenges to be solved. Also, this innovative learning method leads to capacity building, soft skills or 21st-century skills acquisition, and experiential and active learning that connects students with companies, cooperatives, and Third Sector organizations.*

Methodology *To evaluate the impact of the challenge from the perspective of students, the research collects data through EntreComp, the European Framework survey assessing entrepreneurial skills. The survey was submitted to students at the beginning and end of the Course. The research also collects data from the reflective tools used during the Course, such as individual learning agreements and individual reflection reports based on Kolb's approach and Gibb's reflective cycle. To evaluate the impact of the challenge from the perspective of the challenge provider, the research collects data from semi-structured interviews.*

Results. *Preliminary results gathered from the EntreComp and the reflective tools show that students increase their entrepreneurial skills such as, among others, the identification of opportunities, creativity, the capacity to mobilize teammates, problem-solving, and communication skills. From the challenge provider perspective, this Course represents an opportunity to acquire new ideas and solutions, recruit young talents, and gain knowledge and competencies.*

Research limitations. *The students' sample is limited in number. A longitudinal study is not currently possible since this is the first edition of the course.*

Managerial implications. *The paper gives extensive details on designing and managing a challenge-based course to have a coherent and efficient entrepreneurship education initiative.*

Originality of the paper. *The paper contributes to applying challenge-based learning into entrepreneurship education literature, giving two perspectives and studying the impact on the students' learning, specifically on their entrepreneurial skills and the challenge providers' outcomes.*

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Humane entrepreneurship and the circular economy: an empirical investigation

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Abstract

This study examines the Humane Entrepreneurial Orientation (HEO) key characteristics in the field of Circular Economy (CE) investigating Entrepreneurial Orientation (EO), Sustainability Orientation (SO), and Humane Resource Orientation (HRO) in two Italian SMEs presenting circular business models (CBMs). The study contributes to the nascent literature of CE offering evidence of the and Humane Entrepreneurship (HumEnt) approach. Results expands the body of knowledge of EO, SO, and HRO features boosting the discussion among scholars and building blocks toward the betterment of the HEO measurement.

Key words: *Humane Entrepreneurial Orientation; Circular Business Models; Case Studies; Italy.*

Framing of the research. *Humane Entrepreneurship (HumEnt) has been conceived as a behavioral and attitudinal theory of entrepreneurship that extend the entrepreneurial strategic behavior outlined by Covin and Slevin (1989). In particular, drawing on entrepreneurial orientation theory (Covin and Lumpkin, 2011), two different HumEnt models can be detected in literature. Model 1, proposed by Kim et al. (2018), emphasizes the role of human resources and sustains the need to integrate the entrepreneurial within a specific human-centered logic (Kim et al., 2021). Model 2, proposed by Parente et al. (2018, Parente et al., 2021), defines the pivotal entrepreneurial strategic posture of Humane Entrepreneurial Orientation (HEO) as “the extent to which entrepreneurs and top managers are inclined to take care of a firm’s competitiveness, to take care of their human resources and to take care of relevant social values and concerns, including those regarding environmental sustainability” (Parente et al., 2021, p. 512). Given the fact that how to move towards a more environmentally and socially sustainable economy is a long-debated issue, HumEnt seems to represent an essential framework to understand current times and analyze the emerging business models. In fact, HumEnt has been supposed to be strictly related with entrepreneur’s inner values and culture, regulatory rules, operated business, etc., thus having also the potential to boost the transition toward an enlargement of corporation’s main purposes suggested from the Business roundtable (2019). In this paper, HumEnt is examined within the context of businesses implementing circular economy principles in their business models. The circular economy (CE) has catalyzed interest across different quarters recently including policy, business and academic circles for its potential to address multiple sustainability challenges and build a more resource efficient and resilient economy (Kirchherr et al., 2023). Academically, the research on the CE has been proliferating. Authors in this field have conducted extensive literature reviews (e.g., Ghisellini et al., 2016; Ludeke-Freund et al., 2018); they also examined circular business models (e.g., Hopkinson et al., 2018) as well as the relationship between the CE and the United Nation’s Sustainable Development Goals (e.g., Schroeder et al., 2018). Others have explored drivers and barriers to CE implementation (e.g., Govindan & Hasanagic, 2018), application across different contexts (Katz-Gerro & Sintas, 2019), its conceptualization (e.g., Kirchherr et al., 2017) and circularity indicators (Kristensen & Mosgaard, 2020) among other themes. Yet, there are only few studies at the intersection between the entrepreneurship and the CE literature (Re & Magnani, 2022; Zucchella & Urban, 2019).*

Purpose of the paper. *Whilst contributions to these emerging research areas (HumEnt and CE) have been growing rapidly, the literature exploring HumEnt within the CE context is just nascent (Ghisellini et al., 2021; Le, 2022), and in the case of HumEnt contributions have remained at theoretical level in most cases (Kim et al., 2018; Parente et al., 2018; 2021). Thus, more empirical evidence in the realm of business is strongly needed trying to understand how HumEnt values are implemented in business context in particular in the CE. By applying the HumEnt framework, this study attempts to shed light on the CE phenomenon having as its goal the framing of HEO’s characteristics by showing how firms operating in the CE have implemented the HumEnt approach. Using a qualitative methodology and drawing on insights from two case studies (namely, two Italian SMEs), this study attempts to investigate how the HEO’s dimensions have been interpreted, answering the following research question:*

RQ1. How are the characteristics of HEO strategic posture framed in circular small and medium enterprises?

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HEO is described by three dimensions: EO, SO and HRO that are supposed to be part of the firm's business model, strategy and possibly values (Parente et al., 2018, Parente et al., 2021).

Methodology. This research is based on qualitative case studies (Yin, 2014). Qualitative case studies are a common research approach in the empirical literature on circular business models (e.g., De Angelis & Feola, 2020) and HEO (e.g., Vesci et al., 2023; Buratti et al., 2022). Therefore, our research approach is appropriate in the context of this study because both CE and HumEnt are in their early stage, and thereby, could benefit from the insights generated through qualitative research. Purposive logic (Miles and Huberman, 1994) has been used to select our case studies, which means that cases are included because they are relevant from the perspective of this study. The selection of the cases was guided by the circularity measures highlighted in the ReSOLVE framework (EMF et al., 2015), which includes: Regenerate, Share, Optimise, Loop, Virtualise and Exchange (ibid.). These measures mirror CE principles and particularly: 'Eliminate' waste and pollution by design, 'Circulate' materials and components that sit within products and 'Regenerate' natural systems (ibid.). The findings we illustrate are anonymized to comply with the ethical procedure followed in this research.

Alpha and Beta are two Italian companies operating respectively in refurbished electronic devices and packaging sector. Alpha is a SME operating in both B2B and B2C context. Alpha buys directly electronic devices (in particular, iPhones, iPads, and Macs), putting them back on sale at the end of a careful process of regeneration that is divided into three phases: testing (ascertain the actual status of the electronic device), laboratory (repairing), and grading (electronic device grading based on its new status). To date, Alpha has refurbished more than 30.000 electronic devices promoting a smarter and more intelligent approach to consumption. Alpha is an example of a company operating in the 'technical cycle' of the CE espousing the 'Share' and 'Loop' measures in the ReSOLVE framework (EMF et al., 2015). Beta is an SME operating in the eco-design and architecture sector by designing sustainable corrugated cardboard products. In particular, Beta realizes displays, furnishings, communication supports and special packaging that are mainly made with interlocking techniques and without the use of glues. Water-based inks, sophisticated cutting and printing techniques guarantee minimal environmental impact. To date, Beta has realized furnishings entirely in cardboard for restaurants and museums, trade fair stands entirely made of recycled and recyclable cardboard, etc. Beta is an example of a company operating in the 'technical cycle' espousing the 'Optimise and 'Loop' measures in the ReSOLVE framework (EMF et al., 2015).

Both secondary data and primary data (semi-structured interviews) have been collected. Interviews were conducted between October 2022 and March 2023 by one of these authors. The interviews lasted approximately 120 minutes in total, were conducted on-line, digitally recorded and professionally transcribed. Italian interviews were then translated in English by one of these authors. The interviews were conducted with key informants, i.e., those with substantial and exclusive information (Aguinis and Solarino, 2019,) and particularly with the marketing officer for company Alpha and the president and founder for company Beta, so that the questions could be addressed to gain rich data (Creswell, 2012). The interviews were based on questions informed by the CE and circular business models literature as well as HumEnt framework. Data collection was deemed complete at the point of saturation, i.e., when there were no new insights emerging from the process of data collection (Bowen, 2008).

The findings here illustrated emerge from our own data analysis and interpretation and thereby, they fall exclusively under our responsibility.

Results. To ascertain the characteristics of the HEO strategic posture in circular firms, this study employs the HEO framework (Parente et al., 2021; Vesci et al., 2023) which has been chosen for its comprehensiveness in describing HumEnt approach identifying all the elements whose presence is necessary to recognize the high level of strategic posture aligned with HumEnt prescriptions. Particularly, the elements that make up this framework are: Entrepreneurial Orientation, Sustainability Orientation, and Humane Resource Orientation (Parente et al., 2021; Vesci et al., 2023). Next, we briefly illustrate the characteristics of these components for the organizations involved with this study.

Entrepreneurial Orientation

Entrepreneurial Orientation, expressing to which extent firm's strategic posture could be considered entrepreneurial or, in contrast, conservative, includes predominantly three subdimensions (Wales et al., 2013; Rauch et al., 2009): risk-taking, innovativeness and proactiveness as traditionally described by Covin and Slevin (1989).

Risk Taking

For Alpha: "[This is] such a [risk-oriented enterprise]. We believe a lot in this [business] for a simple reason: because in distribution, credibility and the fact of having created it over the years are very important. It is the thing that currently moves operations the most. [...] A new player who wants to enter the distribution sector will have to face many barriers which are certainly linked to the availability of cash flow but also to the willingness to take [other types of] risks. Since we have a very strong network, we can trust our suppliers, just as we are reliable suppliers for third parties. This means that we eliminate the risk or in any case we greatly reduce the risk of accidents, [running the business]". [Alpha's Marketing Director, Interview 1 extract].

For Beta: "there are many types of risks beyond financial risk: outside, there are many things. There are many black swans that come: once Covid came; [...] now this madman has come along and has started the war that has blocked everything. We must also be quite resilient". [Beta's President and Founder, Interview 1 extract].

Innovativeness

For Alpha: “[This company is] very [innovative] in the sense that, as I was saying, we are investing in technology and I’m pleased, in short, [...] to talk about it, because the difference between a new product and a refurbished one is the workmanship and therefore the credibility. [...]. We are investing a lot in technology and therefore innovation is one of the cornerstones. [Innovation] can also take the form of training [...] I don’t know if you were more specific about technological innovation, though! In general, [training and technological education] is an asset [...]. Having technicians that no one else has [...]. Clearly, therefore, also investing in training [means] investing in innovation in a broader sense”. [*Alpha’s Marketing Director, Interview 1 extract*].

For Beta: “Lightness and performance of the paper. This was the innovation we put in. [...] Our main role is to provide customers with innovative solutions for different packaging, which must also be attractive, must be pleasant and the innovation has been made. [...] Everyone makes products but few communicate how the product is made and this is innovation, because obviously the material that you purchase as raw material, even if perhaps recycled, must have specific characteristics, [...] it must be existing, it must be beautiful, it must be clean, it must be everything, but it must also be made with sustainability standards, [...]. Innovation can be product innovation, it can [mean] bringing workers together or [valorising]. those who have said they are doing something new; innovation means looking ahead and seeing what product our customer needs”. [*Beta’s President and Founder, Interview 1 extract*].

Proactiveness

For Alpha: “[Alpha is a] very [proactive company] in the sense that the attention is always there. [...]. Yes, [we made some choices anticipating what then happened in economic scenario], if we are talking about the choice of having the objective of being the company that is the leader in Italy in the field of distribution for this specific refurbished product. [...] This in itself is already a courageous choice. Even before the e-commerce boom there was this definite interest. [...] Abroad there was already much more confidence with online purchases and with the refurbished products. In Italy, refurbished goods were very rarely requested: if in fact, for example, you do a search on Google [about refurbished products and] the keywords searched by users, in the last 2-3 years, [you can see] a huge growth in the last 2-3 years”. [*Alpha’s Marketing Director, Interview 1 extract*].

For Beta: “Moments [of difficulty] may occur because, for example, our customers have less money available to make purchases. Packaging that has a certain cost, display packaging I mean, becomes a superfluous purchase. And this could be a dangerous [for my firm]. [...] There are many of us working in the same direction to develop this business. [...] And therefore we must understand, see the market and give it [what the customer asks for, what] it needs. Calmly, with serenity, without panicking. [...] privileges sooner or later finish; [Let’s stick] to normal things, not to privileges”. [*Beta’s President and Founder, Interview 1 extract*].

Interviews’ results show that differently from Miller (1983, 2011) and Covin and Slevin (1989) that measured: (1) innovativeness predominantly in term of the new products created by the firm; (2) risk-taking as, “the degree to which managers are willing to make large and risky resource commitments - i.e., those which have a reasonable chance of costly failures” (Miller and Friesen, 1978, p. 923); and (3) proactiveness as a forward-looking perspective associated with grasping new opportunities and introducing innovative activities, in the two investigated cases Innovativeness has been associated with training and technological education (Alpha), technology innovation to boost product’s performance (Alpha and Beta) and only finally new products (Beta). Similarly, in the case of risk-taking, both firms, recognizing that risk is strictly associated with cash (and thus is a financial issue), seem to conceptualize the broader concept of entrepreneurial risk identifying ways to face it mentioning entrepreneurial credibility (Alpha), or resilience to manage the business environment (Beta). Only the proactiveness subdimension is completely in line with Covin and Slevin’s (1989) conceptualization as a forward-looking perspective anticipating bad things (Beta) or having the courage to make choices not necessarily in line with the common competitors’ acts, i.e. doing in advance what will occur in the near future (Alpha).

Sustainable Orientation

SO is in HumEnt approach is interpreted as the exhibition of high level of commitment to the preservation of the environment but also in terms of acts to improve the quality of life in the local community (Parente et al., 2021. In this sense, it can be measured by referring to the degree to which the firm “strategically realizes projects (1) to improve the quality of life and the well-being of the local community, and (2) to protect or restore the environment (Vesci et al., 2023, p. 570).

For Alpha: “The direction is to have a strategy that allows us to quantify what our impact is on the environment in the future. At the moment we do it (...) in the sense that we know that [...] we have allies who are equally aware. I’m talking about shipping for example: X is a partner that pays a lot of attention among all couriers, for example to these issues. [...] I would add that [the strategy and] the value proposition [...] is to have strong control of the supply chain. So, we can [...] have access to large stocks at favorable prices. [...] “At the moment we are doing projects with “XXX” (which is a local

company) and with which we are actively trying to create, for example, events for information purposes. (...) For example, the potential customer (...) will have to bring a used phone to participate in the event. This ensures that there is more awareness, and that the rhythm of circularity is also established. (...) because circularity is essentially this: no longer creating a transactional approach (I buy, you sell, etc., etc.) but the same phone passes from hand to hand. So, what do we want to do? We want, let's say, to break down this type of transactional market, to put phones into circulation, to expand the offer, that is, at a certain point we no longer work on phones, but also on services, in such a way that it becomes a habit, that is, the refurbished must become part of the habit of purchasing and using behavior" [*Alpha's Marketing Director, Interview 1 extract*].

For Beta: "We believe in the fundamental principles of sustainability, that in addition to making our profit we must distribute what we do throughout the territory, always respecting the environment. [...] if we collect waste [paper], it means that the value of the territory increases because employment increases and development increases. [For example,] 100,000 tons of papers that we collect means almost 300 more jobs, 80 million euros in value. [...] What does this mean? That the more paper we collect, the more money we save from municipalities and users, and the more we bring to them in the area. But this product must be processed in the area, and in turn it must bring employment. [...] What do we do for the territory? we, in our small way, if we earn enough, we can also give a lot to the territory; if we earn less we give less to the territory. I mean, we can give a little charity, we can help family homes, we can help the municipalities to separate waste collection, we can [develop projects together with the municipalities for the territory]". [*Beta's President and Founder, Interview 1 extract*].

Interviews results show that SO has been excellently interiorized in terms of environmental and social stewardship. In particular, Alpha pays great attention to the environmental side but considers having a direct responsibility in "breaking-down the transactional market" making the refurbished purchase an habit in the society. Beta is even more focused on the social dimension whilst caring for the environmental dimension at the same time. In fact, Beta argues that is fundamental to distribute part of the financial profit to the territory.

Humane Resource Orientation

HRO is qualified by four components: empathy, equity, enablement, and empowerment: (1) empathy is "the extent to which a company shares emotions and information with its employees"; (2) equity is "the extent to which a company treats individuals in a fair and equal manner"; (3) enablement is "the extent to which a company provides the environment where each individual employee is able to develop skills and knowledge, consisting of both skill and infrastructure"; and (4) empowerment is "the delegation of power and responsibility from higher levels of the organizational hierarchy to lower levels, especially in regard to an employee's ability to make decisions" (Kim et al., 2018, p. 21).

Empathy

For Alpha: "In the last three months we have started to make [...] a form of communication exploited on three levels. The first is team building. We actually have sessions within the various teams with me super partes and another person. And then we let the team members talk. So [everyone can] bring out all the gut perceptions so that we can discuss it. A free area in such a way as to have, let's say, a direct comparison with people who perhaps do not normally have the possibility of expressing themselves or in any case do not have an authoritative level. Then there is a level of communication between team leaders. Therefore, team leaders communicate and this ensures that there is more cohesion between the different functions. And finally there is company's communication to all its employees. So at the moment we are structuring ourselves and it is certainly an empathetic way of doing things, in the sense that we try to listen, we have yes, we have implemented this attitude". [*Alpha's Marketing Director, Interview 1 extract*].

For Beta: [In our company we took] guys [who] did an internship; they did two years of training. Today they are all permanent employees. Seeing these kids who you took from them at 20 years old who at 27-28 years old were able to buy a car, were able to get married, were able to start a family and have children... it becomes a very [satisfying] thing". [*Beta's President and Founder, Interview 1 extract*].

Equity

For Alpha: "Let's say, at the moment, when we are putting open positions online, we do it first and foremost, both in English and in Italian, precisely to give access to people who perhaps have difficulty with the Italian language but who still manage to get by. In this way we overcome the problem of language and at the same time also of ethnicity. [We specify] very clearly that we are open to all types of applications, so I also talk about the issue, let's say disability, the issue of the gender gap, [...] that is, [diversity gaps] are issues that we care about but clearly there is a background, I'm talking about the culture from which we come, which does not favor the entry of diversity within the company. [...] [In sum,] current state - future state: there is a difference [in term of equity that] [...] has not been addressed before, unfortunately, but for many reasons [...] but we are working on it". [*Alpha's Marketing Director, Interview 1 extract*].

Enablement

For Alpha: “The point is that on many tasks in which we are finding that there is perhaps a possible frustration - I am talking about years of work in the same sector and in the same job -, what is the only way to create perspective for the worker? That of differentiating the task. So, in 5 years from now the tester will not only be responsible for carrying out tests, but possibly we will have different figures always in the same sphere of action who will take care of, I don't know, coaching the new entrants, therefore carrying out boarding, etc.” [*Alpha's Marketing Director, Interview 1 extract*].

Empowerment

For Alpha: “Then, let's say, [the employee or worker is not authorized to] make decisions. But the idea that the employee can in his, in his [job routine] find the solutions to bring to management or to the executive, is something that has always been clear, always been, not only accepted, but welcome. So, let's say: on this I think there is clarity within the company. We are all in the same boat: so, obviously, finding a solution doesn't just mean bringing good to your own mill, bringing water to your own mill, but bringing water to everyone's mill. I think that there is no doubt about this: there is, there is a lot of openness on the part of the executives”. [*Alpha's Marketing Director, Interview 1 extract*].

For beta: “there is continuous participation of human resources. If someone makes an improvement, they do it and move on. [Executives do not block him]”. [*Beta's President and Founder, Interview 1 extract*].

Interviews data show that HEO has different levels of interiorization and also different understanding at least for some subdimensions. In fact, the four dimensions of empathy, equity, enablement and empowerment are clearly evident in Alpha only whilst for Beta there is evidence of empathy and empowerment only. Beta perfectly interpreted the concept of empathy, with its President so proud to share emotions, feelings, concerns, and goals of employees. On the other hand, Alpha shows a different level of empathy that seems to be just at initial stage, that is that of listening. Alpha has very clear the concept of equity in terms of equal treatment of all employees, recognizing that executives are still working on this aspect because for several reasons in the industry is still difficult to tackle the gender gap, diversity gap, etc. In addition, Alpha demonstrates not to fully grasp the theoretical conceptualization of enablement that is prevalently seen only as matter of job enlargement, remaining not well focused the issue of education and training in a global perspective. Related to empowerment for both the interviewed firms, executives are very open to leave some degree of freedom to their employees in taking autonomous decisions, but Alpha seems to be more restrictive than Beta.

Research limitations. *Whilst we make relevant contributions to the CE and HumEnt literature, we are aware that this study has also some limitations, mostly notably, the limited geographical scope and the number of organizations investigated.*

Theoretical and Managerial implications. *There are several theoretical and managerial implications deriving from this study. Firstly, this study finds that there are circular businesses presenting the HEO theoretical characteristics, thus adding empirical evidence to HumEnt literature and bridging circular business models studies to entrepreneurship investigations. Secondly, this study expands HumEnt theory recognizing that in humane entrepreneurial oriented firms the strategic posture is developed along the three lines of EO, SO, and HRO and demonstrating that is possible to find different levels of EO or SO or HRO. In sum, this study confirms the theoretical position of Parent et al. (2021) and Vesci et al. (2023) that only the presence of the three subdimension allows to classify the firm as a humane entrepreneurial oriented firm and that reality displays firms with a clear expression of only some of the subdimensions that compose HEO. Thirdly, findings suggest that in the CE field SO is clearly understood as both environmental and social, being aligned with previous study of Vesci et al. (2023). Fourthly, this study provides evidence of CE implementation thereby contributing to advance the CE literature, where most studies have been conceptual to date (Zils et al., 2024). Fifthly, as one of the cases stressed that a positive workplace climate and staff wellbeing are results of long-term action, managers and entrepreneurs must plan and organize training courses and team-building events, with the aim to reinforcing the familial feelings among the workforce. Finally, as HumEnt is not a simple task and it appears to be costly at least in the short run, institutions and governments should think to several forms of supporting firms that respect HumEnt principles.*

Originality of the paper. *This study contributes to the scant literature at the intersection between entrepreneurship and CE, and particularly to the nascent literature combining HumEnt with CE. In addition, this study analyzes firms that display an entrepreneurial strategic posture corresponding to a HumEnt approach contributing to the discussion on the HEO key characteristics in the CE field. Finally, the analysis shows that entrepreneurs' personal values and credos are strictly linked with HEO.*

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Is Passion a Driver of Sustainable Entrepreneurship? An Autobiographic Analysis of Fashion Entrepreneurs

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Abstract

Sustainable entrepreneurship combines the identification and development of profitable opportunities with sustainability goals. Sustainability orientation is significantly influenced by the specificities of the entrepreneurial identity, which is a widely studied concept deserving dedicated research efforts to connect with sustainable entrepreneurship. Further investigation is required to enhance our understanding of the primary factors influencing the development of entrepreneurial identity in sustainable entrepreneurship, with passion being an aspect that has received minimal attention.

This work-in-progress paper expands knowledge on the sustainable entrepreneur's identity as a set of factors boosting and shaping sustainable entrepreneurship. Particularly, the focus is on a theoretical and empirical exploration of the phenomenon of passion throughout the entrepreneurial process oriented to sustainability. By adopting autobiography as a research approach and methodology, this study explores the entrepreneur's point of view on passion, its essence, formation and impact on the entrepreneur's decision-making and sustainable business venture. To what extent does passion contribute to sustainable entrepreneurship from the entrepreneur's point of view? How and to what extent does passion motivate and explain decision-making and actions according to the entrepreneur's reflective self-narration?

Preliminary results revealed that passion significantly emerged in the entrepreneurs' self-narration as a driver alongside their personal and professional growth path. Passion emerges as a training-driven and experience-driven phenomenon rather than an innate and natural propensity. Furthermore, the entrepreneur's perception and awareness of being in the condition to achieve concrete sustainability goals, based on skills, competencies and first-hand experience, seem to mediate the path from individual passion to a sustainable entrepreneurial venture.

Framing of the research. *Sustainable entrepreneurship frames the identification and development of profitable opportunities with sustainability goals. Sustainable entrepreneurship generates hybrid organisational forms combining "demand-based market logic with a need-based social logic" representing an organisation's social and environmental footprint (Stubbs, 2017: 332). Entrepreneurial activities producing solutions to social inequality and environmental degradation, rather than causing them, are considered a new field of research, still in its infancy due to the limited understanding of the nature of this phenomenon (Munoz and Cohen, 2018).*

Diverse research approaches emerged concerning sustainable entrepreneurship. Entrepreneurship theory perspectives have focused on intertwining sustainable development and the entrepreneurship process alongside the business idea's discovery, creation and exploitation (Terán-Yépez et al., 2020). Profiling and understanding the entrepreneur as an individual who can effectively frame economic, social and environmental dimensions into an organisation are at the core of this agenda (Young and Tilley, 2006). The entrepreneur's characteristics and attitudes have been under scrutiny as explanatory variables of sustainable entrepreneurship, such as knowledge and skills, motivations and intentions, values and attitudes, moral cognition, business orientation and entrepreneurial self-efficacy (i.e., belief in oneself capability to perform a task) (Munoz and Cohen, 2018). The sustainability orientation is significantly influenced by the specificities of the entrepreneur's identity, which, consequently, deserves dedicated research efforts in the sustainability domain. Beyond the cognitive mechanisms activated by life experiences, motivations and intentions emerged as the most critical factors of sustainable venturing, along with a "transformative mindset" pushing decision-making and actions (Munoz and Cohen, 2018).

Further investigation is required to enhance our understanding of the primary factors influencing the development of entrepreneurial identity in sustainable entrepreneurship, with passion being an aspect that has received limited attention (Mmbaga et al., 2020). Scholars have scrutinised how passion manifests as an entrepreneurial activity, whether through

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conventional entrepreneurship or via unconventional paths within collective "tribes" (Biraghi et al., 2018; Cova and Guercini, 2016).

Passion has evolved into a pivotal component of identity, playing a crucial role in driving entrepreneurship presently and significantly influencing entrepreneurial intention (Fayolle and Linan, 2014), which is fundamental to entrepreneurial endeavours (Shah and Tripsas, 2007). In a study conducted in 2017, Bao et al. examined the relationship between entrepreneurial passion, opportunity recognition, and entrepreneurial behaviour, revealing that individuals with high enthusiasm for entrepreneurship were more likely to identify and launch new ventures (Bao et al., 2017). These studies draw upon Cardon et al.'s (2009) definition of entrepreneurial passion, which refers to the positive emotions experienced through engagement in entrepreneurial activities pertinent to the entrepreneur's self-identity. Entrepreneurial passion is understood as emerging when entrepreneurs feel strong positive emotions towards a particular entrepreneurial endeavour or "domain" they engage in, such as inventing, founding, and developing. They perceive this activity or "domain" as integral to their self-identity (Cardon et al., 2013). Besides the three activities of inventing, founding, and developing, entrepreneurial passion can be directed to other domains that represent the source of passion and what fuels it and drives entrepreneurial activity. Cardon et al. (2017) raise the question "Passion for what?" and identify six major sources of entrepreneurial passion: passion for growth, passion for people, passion for the product or service, passion for inventing, passion for competition, and passion for a social cause.

Following this line of reasoning, passion-driven entrepreneurship was analysed concerning different domains such as hobbies (Milanesi, 2018), cultural and artistic events (Pagano et al., 2018), hospitality (Pedeliento et al., 2018), and digital contexts as in the case of YouTube autopreneurs (Mardon et al., 2018). A literature review has evidenced that the current research is mainly focusing on the entrepreneurial passion perspective and evidencing the aspects related to domain passion or both the former and the latter perspectives' role in the entrepreneurial process. All the cases analysed do not seem to merely belong to the classic model of the entrepreneurial process (Reynolds & White, 1997) or the end-user entrepreneurial process (Shah & Tripsas, 2007). However, those company cases show a joint entrepreneurial process originated by domain and entrepreneurial passion, which has been limitedly analysed until now, according to the authors. Therefore, we wonder whether sustainability can be considered a domain of entrepreneurial passion and a driving force behind sustainable entrepreneurship.

Purpose of the paper. This paper expands knowledge on the sustainable entrepreneur's identity as a set of factors boosting and shaping sustainable entrepreneurship. Particularly, the focus is on a theoretical and empirical exploration of the phenomenon of passion throughout the entrepreneurial process oriented to sustainability. Through the autobiographic methodology, this research adopts the entrepreneur's point of view on passion, its essence, formation and impact on the entrepreneur's decision-making and sustainable business venture. How and to what extent does passion motivate and explain decision-making and actions according to the entrepreneur's reflective self-narration? To what extent does passion, as discussed in the extant literature, contribute to explaining sustainable entrepreneurship?

Methodology. From a methodological perspective, this research relies on the autobiography methodology to unveil the entrepreneur's self-concept, influencing critical decision-making (Fauchart and Gruber, 2011; Mmbaga et al., 2020). Even though significantly overlooked in business and organisational studies, autobiographies are retrospective self-representations (Hulsink and Rauch, 2021) with the potential to explore entrepreneurial identity.

Beyond being a tool for collecting and analysing data, autobiographies are a research strategy that substantiates the research point of view (Mmbaga et al., 2023), which corresponds to the first-person perspective of the investigated subject (the entrepreneur in our study). This method implies the subjective projection of identity work as an internal and reflective self-narration, giving insight into how the individual experiences the surrounding environment and constructs his/her identity (Mmbaga et al., 2023). The perspective of subjective self-narration may acquire further relevance in sustainable business, for the complexity of going beyond the purpose of economic profitability, potentially heightening the need for individual motivation and self-empowerment.

Storytelling and verbal representations are part of the narrator's entrepreneurial self-identity building and a sensemaking device to manifest identity (i.e. the entrepreneur, Mmbaga et al., 2020; Mmbaga et al., 2023) by giving meaning to actions and events in which the narrator is involved (Albert and Couture, 2013). Stories and life episodes verbally represent the entrepreneur's identity and legitimate the entrepreneur and his/her venture (Down and Warren, 2008).

The key difference with the biographical method concerns the internal "first-person account of thoughts, feelings and relationships" (Hulsink and Rauch, 2021, p. 914), contrasting with the multiple perspectives on the investigated subject given by biographies (Carradus et al., 2020). Autobiographies steer "internal self-reflection" through the reconstruction of one's life history, the critical moments of understanding and thoughts and cognition, emotions, and interactions with other actors in the form of temporal junctures, events and actions that have built the individual identity (Mmbaga et al., 2023). Unfolding processes, dynamic events and evolving individuals and organisations are under scrutiny through life history data (Hulsink and Rauch, 2021). Autobiographies allow insights into the organisation leaders' vocation and their challenges in translating their vocation into organisational practices (Corradus et al., 2020). Sense of self and sense of place (the organisational and the broader contextual and geographical environments) are the outcomes of this explorative technique.

Despite the social desirability bias to be considered when collecting and analysing data (particularly relevant when dealing with sustainability in both its social and environmental dimensions), autobiographies have been recently rediscovered to reach fruitful insight into individuals' feelings of suitability for being entrepreneurs, the challenges faced to translate their ideas into practices, and to dig knowledge into success and failure factors in the entrepreneurial venture

(Carradus et al., 2020). Besides, autobiographic narratives “represent not only an exercise in fact, but also one in which the writer chooses stories that can help create a positive narrative identity, perhaps to enhance self-image and reputation” (Mmbaga et al., 2023, p. 248).

Empirically, this study focuses on multiple case studies (Eisenhardt, 1989) to elaborate theory from autobiographies (Mmbaga et al., 2023). The object of analysis has been the entrepreneurial venture related to three Italian companies in the sustainable fashion industry (i.e., shoes, clothing, and textiles). Case Alpha, Case Beta and Case Gamma achieved a sustainable brand positioning according to the entrepreneurial choices over the business venture. The empirical analysis aims to explore the evolution of the entrepreneurial venture, drawing attention to the entrepreneur’s individual experience and the role of passion towards the definition of a sustainable business. The three cases were selected to fit the theoretical category (Eisenhardt, 1989) of firms with a sustainability vision whose stories and identities are tightly linked to the individual founder pursuing and personally committed to sustainability.

Case Alpha was founded in 2018 in Prato (Italy). The firm has 13 staff members and is a sustainable fashion brand of regenerated clothes, entirely locally produced. In Italy, it coordinates the collection of old clothes and the regeneration process into denim, cashmere, and cotton garments, and it is committed to strict control of the supply chain. It distributes its garments online and through resellers in Italy, Europe, and Canada. The firm’s turnover shifted from 650,000 Euro in 2020 to 3 million in 2022, drawing investors’ attention. Corporate sustainability is framed by using recycled and regenerated textiles, a pre-sale policy against overproduction and waste, reusable packaging, social responsibility and transparent business practices.

Case Beta was founded to use sustainable innovations to transform the footwear industry. With Zipshoe crowdfunding, the firm was established on Kickstarter in 2017 and was able to raise over \$1 million in pre-orders. Over the years, the startup has continued to innovate and stay true to its mission—that anything can be changed—. While analysing the fashion market, its founders realised that shoes, particularly sports shoes, had remained distant from sustainability concerns and practices even though young consumers were concerned about sustainability and their individual contribution to it. The founders stay true to their mission to modify the market and have established more than 70 partnerships with other luxury and fashion brands to share their R&D knowledge to further develop a sustainable change. In 202, it was certified as a B Corporation.

Case Gamma was founded in 1943, and is now one of the leading companies in the textile industrial district of Prato. The firm produces a wide range of undyed regenerated wool colours and luxury fabrics with different constructions, weavings and finishings, all made with recycled wool. The firm pursues growth and expansion objectives based on the values of sustainability, a zero-waste system, sustainable design, and traceability. The firm’s turnover in 2022 approached 100 million euros, over 90% of which came from foreign markets.

This study collected data through primary and secondary sources (i.e., websites and social media), including texts and videos reporting the entrepreneurs’ first-person perspective and representation of the self throughout their entrepreneurial venture. In-depth interviews with the entrepreneurs were carried out. The interview process focused on the process of becoming an entrepreneur and the subsequent evolutions: a first round of questions followed an unstructured interview scheme to reduce the researcher’s intrusiveness (Meyer, 2020), while a second round of questions followed a semi-structured scheme further stimulating the interviewee to elicit events and actions remarking life history phases, critical moments and the interviewee’s cognitive and emotional engagement, interactions with other actors. Different rounds of interviewing are sought to overcome the issues of time limitation and limited reflection through an intrusive data collection technique (Mmbaga et al., 2023). Different interview rounds may consolidate the interviewer-interviewee relationship, enabling the interviewees’ “intimate account of cognition, emotions and relationships that are central to identity formation” (Mmbaga et al., 2023, p. 248). The secondary data sources provided additional self-reflection traces, helping mitigate the limitations of the interviewing process in the autobiographical method.

All the collected textual data were analysed through qualitative content analysis (Krippendorff, 2004), holistically deriving insights and meanings from the text and reducing the decontextualization of meaning inherent to quantitative content analysis. A systemic coding process was undertaken by combining inductive and deductive approaches (Cho and Lee, 2014). Texts (i.e., website texts and video transcripts recording the entrepreneurs’ voice, and interview transcripts) were, first, analysed without adopting initial codes, letting codes emerge from the text; subsequently, a deductive approach to coding ensured the systemic analysis of text according to the key dimensions that the auto-biography allows eliciting according to extant literature (e.g., life history phases, critical moments, interactions). A flexible pattern matching (Bouncken et al., 2021) develops categories and identifies relationships framing passion and its role in the entrepreneur’s personal and professional path.

Results. This work-in-progress study has produced some preliminary results.

In both Alfa, Beta and Gamma cases, individual passion emerged as not just an innate and natural propensity of the individual consumer, who then becomes an entrepreneur. The entrepreneurial venture in sustainability results from an articulated combination of unconventional factors. As evidenced, previous streams of research have contributed to the debate on the process that leads to “unconventional” forms of entrepreneurship (Cova & Guercini, 2018) and specifically from passion to business (Chen et al., 2015; Biraghi et al., 2018; Cova & Guercini, 2016; Guercini & Ceccarelli, 2020; Cardon et al., 2017). The emerging autobiographical narratives of the sustainable entrepreneur raise the following three points which will inform subsequent analysis.

Firstly, the entrepreneur's passion widely emerged in narrating the individual path of personal and professional growth. Their passion for sustainability has been shown to impact on how they conceive their role in the market and the company's positioning as "non-competitive", as firms are active in implementing and sharing sustainability practices (Lawrence et al., 2006). Accordingly, in their narratives about their professional growth associated with the creation and development of their venture, the entrepreneurs have recalled the significance of the role of "activators" of sustainable business networks that the firms have, overcoming the competition logics, business network conclusions and boosting cooperative schemes through connections (Halinen et al., 1999), since the early phases of development.

Secondly, in the sustainable entrepreneurs' self-representation, the narrated passion is a training-driven and experience-driven phenomenon. In the process of translating and transforming passion into a business (Biraghi et al., 2018; Cova & Guercini, 2016), the entrepreneurs' self-account leaves behind the concept of passion as an innate and natural propensity. Sustainable entrepreneurial venturing combines a training-driven and an experience-driven passion for sustainable fashion. About training-driven passion, formal education, as an opportunity to learn skills and competencies through university degrees (fashion learning programs), and on-the-job training in the early phase of professional development framed the entrepreneurs' passion. The second component (i.e. experience-driven passion) concerns the entrepreneurs' immersion in territorial contexts where the environmental and social issues were highly visible and a lived experience (i.e., travel and work experience in emerging countries where they had a first-hand experience of extreme consequences of environmental pollution and social inequality).

Thirdly, the entrepreneur's perception and awareness of being in the condition to achieve concrete goals seems to mediate the path from passion to the entrepreneurial venture. This emerging state of mind resounds with entrepreneurial self-efficacy (Chen et al., 1998), whose connection with passion was discussed by Cardon and Kirk (2013), framing entrepreneurial persistence. Our study's results shift the focus to the enterprise start-up phase, providing preliminary evidence of the entrepreneurs' understanding of skills and competencies, combined with their lived experience, as boosters of consciousness, sense of responsibility, and intimate mechanisms connoting passion as a driver of sustainable entrepreneurship. From the entrepreneurs' self-portrait, skills, competencies and first-hand experiences compose the entrepreneur's background, substantiating cognition and feeling of being able to find concrete, valuable solutions and make an impact.

Research limitations. This is a work-in-progress paper that, relying on an initial empirical study, currently presents various limitations. In autobiography methodology, various issues should be considered, including the researchers' positionality and the relation with the object of analysis, especially concerning interviews, and the social desirability bias. Nevertheless, the constructivist nature of the adopted methodology recalls our attention to the knowledge built by human representation resulting from context- and goal-dependent sensemaking (Albert and Couture, 2013).

The analysis mainly focused on verbal representation and texts, with limited (and non-systematic) analysis of visual data that especially online sources may provide (e.g., social media accounts).

Managerial implications. Significant implications concern the modalities to nurture sustainable entrepreneurship, which is fundamental to addressing several contemporary societal challenges. The results of this study suggest the relevance of the role of "activator" in the field, educational programs, and exposure to lived experiences in framing passion and its capacity to trigger entrepreneurial development. Education organisations and those in charge of boosting and accelerating sustainable entrepreneurship should consider the results emerging from the proposed analytical perspective, as well as NGOs and consulting companies focusing on sustainability that could positively impact a change in the business.

Originality of the paper. This study is built at the intersection of two significant gaps in the literature. First, understanding passion as a driver of sustainable entrepreneurship potentially adds to the existing conceptualization and discussion of entrepreneurial passion. Second, it expands entrepreneurship studies by adopting autobiographies, a research approach and methodology that has remained largely underexploited.

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Social Innovation: a literature review mapping intellectual structure of the field

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Abstract

This article is based on a systematic review of literature on social innovation with the purpose of understanding and defining the current intellectual structure of this research area. This study aims to serve as a starting point for advancing theory on social innovation. Previous literature has shown that as a field of study is highly underdeveloped while at the same time it is very fragmented. This has given rise to the need to find a clear visualization of what are the most relevant topics related to social innovation. We used a systematic review of the literature using bibliometric techniques for analyzing 132 peer-reviewed articles published in journals ranked as 4 and 4 by the Chartered Association of Business Schools 2021. Using a bibliographic coupling analysis, we identified five clusters. Our analysis has implications for researchers looking to advance research on social innovation as well as for firms looking to positively impact society.*

Key words: *social innovation; social entrepreneurship; social entrepreneur; social value*

Framing of the research. *Social Innovation is a topic highly debated in academia. Even though some of the first studies in this field were published in the early 1990's, it is a topic that has gained relevance in the last decades. Despite of the high interest in furthering knowledge on this field, there are also high levels of heterogeneity in terms of disciplines and theoretical approaches exploring this topic. Management scholarship is no exception to this and studies on social innovation have been developed from diverse perspectives such digitalization and other types of innovation (Fosso Wamba et al., 2021; Mariani et al., 2023), collaboration among different sectors (Lenz and Shier, 2021), and corporate social innovation (Dionisio and de Vargas, 2020). However, among these perspectives, there is a great body of literature studying social innovation as part of, and in connection with, research on social entrepreneurship.*

Lortie and Cox (2018) found that social innovation is one of the most related areas concerning studies of social entrepreneurship along with other topics such as corporate social responsibility (CSR), bottom-of-pyramid (BOP), Non-profit management, and impact investment. Based on their findings, these authors called for further research in understanding differences in the antecedents of social innovation and social entrepreneurship and whether social innovations produced by social enterprises differ from social innovations produced by traditional forms of organizations.

On the other hand, Phillips et al. (2015) also build on theory on social entrepreneurship in order to understand the relationship between social entrepreneurship and social innovation, as well as identifying frameworks that bring together these two topics. They found that social innovations stem from the interaction among different actors within the social system and developed through collective learning. Multisector collaboration and partnerships are indeed, one of the common grounds among studies on social innovation despite of the existing heterogeneity and lack of consensus in what is social innovation.

Another line of research growing in recent years is that of digital technologies as means that could be used for achieving social impact. Within this line of studies, we found that Dionisio et al., (2023) examined the evolution of the concept of digital social innovation and whether it connects (and in which way) with the sustainable development goals of the United Nations.

Moreover, in addition to showing a vast number of studies examining theories and frameworks on traditional entrepreneurship and innovation and how they relate to social innovation and social entrepreneurship, research on social innovation is concentrated for most part in qualitative methods among which there is prevalence for empirical studies, (Desa and Koch, 2014; Ulfah and Dhewanto, 2015) which can be explained by the fact that it is a stream of research still in early stages.

Purpose of the paper. *Given the great fragmentation faced by this field it is important to understand and clearly define the current intellectual structure of this research area to advance theory on this topic. So far, research on social innovation has grown in terms of number of contributions, with many of them reviewing current literature. However, there is a lack of depth in the development of the different sub-fields of study stemming from this topic. Considering this idea, the aim of this paper is to analyze the main contributions to the literature on social innovation by identifying the*

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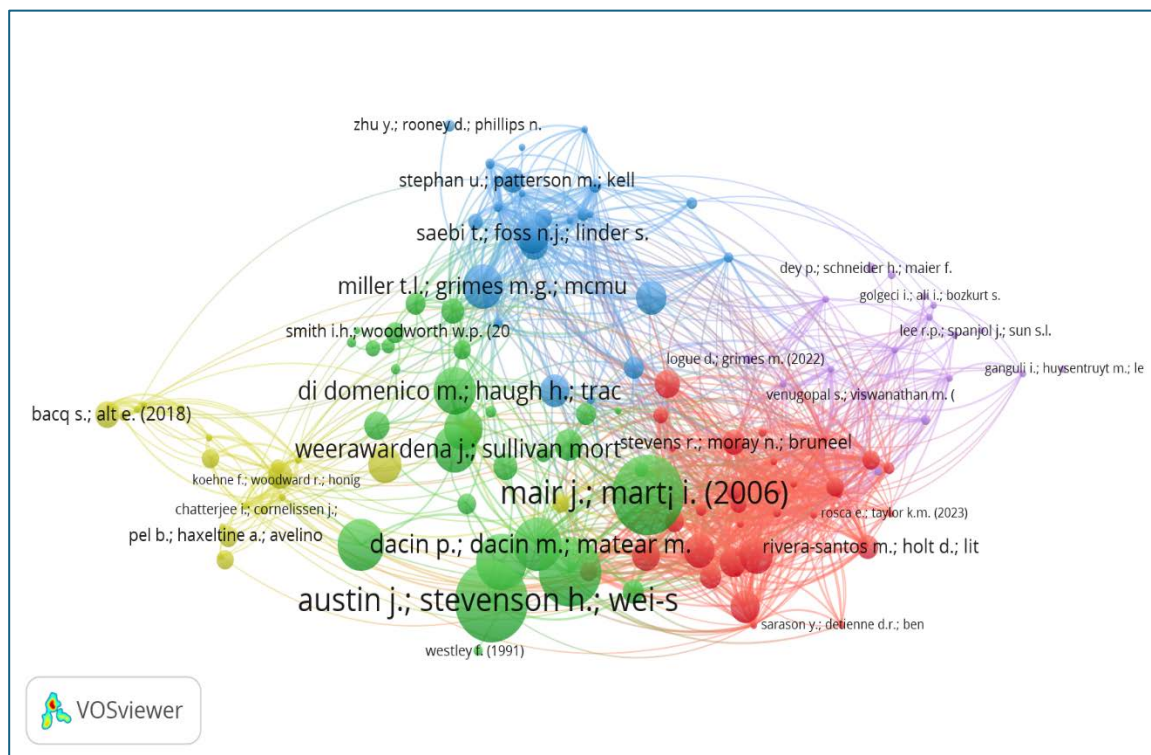
main general areas in which the current studies have concentrated as well as key research gaps that could guide the path for a larger study on Social Innovation, thus serving as a foundation for a deeper theoretical development.

Methodology. To describe the current structure of the literature on social innovation, we conducted a first exploration of current research on social innovation using the Scopus data base to find articles based on previous reviews on social innovation. We used the terms “social Innovation” AND “review” to search within title, abstract, and keywords to search articles within the subject area of Business, Management and Accounting that were published in English. This initial search resulted in 114 articles from which a sample of 27 documents was extracted. These articles were examined to identify the most common keywords used by other authors to search for studies on social innovation. Furthermore, we performed a systematic review on these 27 documents in order to better positioning our paper.

Once we completed the identification of keywords, we built a new search string in Scopus with the terms "social innovat*" OR "creat* shar* value*" OR "csi" OR "social entrepr*" OR "social enterpr*" OR "purpose* organi*ation*" OR "hybrid organi*ation*". This was the best combination of keywords to be used for searching on the database within title, abstract and keywords. In addition, to these search terms we considered all articles published up to December 2023 (included), published in English within Business, Management, and Accounting. The search displayed a total of 9181 articles which we ranked using the Chartered Association of Business Schools ranking and selected those articles ranked in Journals classified as 4 and 4* (top journals). Doing this, we extracted 1271 articles. After carefully screening the abstracts, we were left with a final sample of 132 articles.

To analyze the data, we conducted a bibliometric analysis using bibliographic coupling. Bibliometric analysis is considered a rigorous method for exploring and analyzing large volumes of scientific data while bibliographic coupling provides a representation of the current structure of a research field (Casprini et al., 2020; Donthu et al., 2021). Using VosViewer software, we mapped the data selected in our sample which allowed us to identify 5 different clusters as illustrated in figure 1.

Figure 1



Results. From a total of 132 articles considered for the analysis, 126 were part of one of the five clusters identified. Consequently, the remaining 6 articles did not have any connection with other documents. Therefore, they were excluded from the bibliographic coupling analysis. Based on the total number of citations of each cluster, the analysis present cluster 1 as the most influential one with 13371 citations.

Cluster 1

The first cluster is the largest cluster with 33 documents. This network is highly dominated by research on the initial stages of entrepreneurial activities and the intersection between strategy and organization theory and social entrepreneurship theory. Articles covering these topics represent 60% of the documents in this network. In addition, four documents focused on the potential of Tourism Social Entrepreneurship for the transformation of communities.

Within this cluster, there are three documents offering insightful theory with the potential to develop grounds for further studies, two of them are based on reviews of previous literature. The first one is the work of Stevens et al., (2015) who identified dimensions for delineating social and economic missions. These authors built on theoretical constructs to propose different dimensions (measures to capture value, organizational identity, and attention to social and economic goals) for understanding the relationship and navigating tensions between social and economic missions of social enterprises.

Another relevant paper in this cluster is Choi and Majumdar, (2014). In their work, they propose to approach research on social entrepreneurship defined as a conglomerate of more than one sub-concept (social value creation, the social entrepreneur, the social entrepreneurship organization, market orientation and social innovation).

In addition to the two articles mentioned above, within this cluster is the work by Rawhouser et al. (2019). Emerging in the second half of the period covered by this cluster, this study examines previous research on social impact. In this review of the literature, the authors find a high level of heterogeneity among the different studies that had been conducted with the aim to establish a definition of this concept. As a result, they propose a typology of four different approaches stemming from two dimensions to conceptualize social impact. The two dimensions are: according to the social impact process and according to the generatability of the application.

Cluster 2

This network covers the largest period from 1991 until 2020, with 29 documents with the most part concentrated on issues related to social entrepreneurship education and learning with eight documents, and another important group of documents examining different aspects of social entrepreneurship. The rest of the articles in this cluster examine topics related to social innovation, social entrepreneur, and the creation of social enterprises. This cluster represents approximately 59% of the total citations among the five clusters, which puts it forward as the most influential network in this analysis.

As part of this network, the work by Dacin et al. (2010) presents the highest degree of centrality. This article proposes a different approach to social entrepreneurship studies concluding that the greatest opportunities for researchers interested in this field are in studying this concept through the lens of a theories and frameworks related to regular entrepreneurship applied to the social context.

Moreover, another document that stands out in this network is the one by Dacin et al., (2011) diving into the promise of social entrepreneurship as a new domain of study and propose avenues for future research. Among opportunities to further studies on social entrepreneurship, by examining previous contributions to the conceptualization of social entrepreneurship they propose that to advance theory on this topic it could be useful to focus on outcomes and contexts. In doing so, studies could offer meaningful ways to understand this concept from a theoretical and practical perspective.

Finally, one third article in this network that proposes relevant theoretical grounds for the development of further research is the one by Zahra et al., (2009). This study reviews the concept of social entrepreneur proposing three different typologies that determine the way in which social entrepreneurs identify opportunities, determine their impact, and put together the resources needed to pursue them. Furthermore, they highlight the emergence of ethical issues stemming from linking economic thinking with the generation of social wealth, understood as a metric to measure how social entrepreneurship contributes to the maximization of total wealth.

Cluster 3

This group of articles shows the highest density of connections, and it comprises the same period as cluster 1. This cluster shares the highest density of connections, where the work by Miller et al., (2012) results as the one with the highest degree of centrality. This article discusses the role of compassion in encouraging the creation of social ventures, building on theory about the relationship between social entrepreneurship and compassion focusing on affective and cognitive mechanisms and they offer contribution not only for the social entrepreneurship filed but also for entrepreneurship research.

Vedula et al. (2019) discussed the concept of entrepreneurship for the public good by reviewing literature on social and environmental entrepreneurship to dive into the evolution (with converging paths) of these two concepts as well as identifying specific areas of collaboration between them. They propose how the two streams can be integrated to understand how entrepreneurship as a field of study can contribute to the public good.

Finally, Lazzarini (2020) proposed a framework for explaining how three forms of organization (public bureaucracy, public-private partnership, and social enterprises) support social value creation. This document offers insight on measurement of social impact which is a highly underexplored topic within social entrepreneurship research.

On the other hand, Saebi et al., (2019) offer an analysis relevant for advancing studies on social entrepreneurship. By reviewing literature on social entrepreneurship, they propose that theory on social entrepreneurship can benefit from using a multilevel analysis (at the individual, organizational and institutional level) approaching social entrepreneurship based on two dimensions, one concerning whether the social value is created by or for the beneficiaries, and the second one according to the level of integration between social and commercial activities.

Cluster 4

Cluster 4 unfolds within the period of 2012 to 2023. Topics examined by the articles in this network address different perspectives on innovation research connecting different theories, approaches, and concepts with their ability to impact society. This cluster is for most part concentrated in articles touching on different aspects of social entrepreneurship such as prosocial power and pro social perspectives, as well as documents examining the role of human capital and communities in the success and development of social entrepreneurial initiatives.

Central in this cluster we find the work by Koehne et al., (2022) who examined the role of the transnational social entrepreneur and their ability to impact, whether positive or negatively, the lives of disadvantaged communities. This article stands as the one with the highest number of shared references in relationship with the rest of the documents in this group. Moreover, the most influential article within this cluster is the one published by van der Have and Rubalcaba, (2016) addressing the evolution, content, and scope of Social Innovation across different disciplines as a nascent field of research. The authors highlight importance of multi and intradisciplinary approaches in understanding and defining Social Innovation, emphasizing that despite the high levels of fragmentation of this field, it should be studied taking into consideration two main core conceptual elements. The first one, that social innovation implies change in social relations, systems, and structures, and that these change aims to address the need to solve an important social problem. This is one of the first systematic reviews using bibliographic data to describe the intellectual structure of this research field.

In addition, from the 22 documents included in this network, Estrin et al., (2016) highlighted the importance of human capital in entering entrepreneurship by extending human capital theory to social entrepreneurship. In contrast with previous studies addressing this area, they highlight the relevance of “taking into account ability and skills to understand who is more likely to become an entrepreneur” (p.465) (add page number).

Bacq and Aguilera, (2022) on the other hand, address the role of community engagement in generating social impact. In their study, these authors identified a continuum of community roles ranging from passive beneficiaries to highly active entrepreneurial social change agents, and a set of different typologies that describe communities.

Cluster 5

This cluster is the smallest one in terms of number of documents and lowest number of total citations with 301, however it is the third one in terms of density of connections, covering a period of eight years of research. This group of articles is concentrated in the field of strategy, organization, and innovation. Unlike most of the clusters described above, in which there is an evident dominance of research focused on social entrepreneurship, traditional entrepreneurship and innovation, this network includes an important number of articles specifically addressing the topic of social innovation (Fu et al., 2023; Ghauri et al., 2023; Kruse et al., 2019; Marcy, 2015; Steinfield and Holt, 2019; Vassallo et al., 2019; Venugopal and Viswanathan, 2019; Viswanathan and Sreekumar, 2019). In addition, this cluster is dominated by articles addressing contexts of grand challenges, bottom of the pyramid and bottom-up approaches to social innovation as well as complex humanitarian problems.

Within this network, the article by Venugopal and Viswanathan (2019) is the one with the highest degree of centrality. Through empirical analysis of a sample of social enterprises operating in different country contexts, they have developed a process of “facilitated institutional work” to implement social innovation. This model is characterized by the participation of local communities in driving institutional changes to facilitate the implementation of social innovation. In addition, the most influential paper on this network (the one with the highest number of citations) is the work of Logue and Grimes (2022) linking the creation of digital platforms for enabling social innovation and institutional theory.

Discussion

As discussed in the literature review section of this paper, the high level of fragmentation among studies concerning social innovation is evident. It is also evident the fact that social innovation on its own as a line of research is highly under explored and lacks depth and structure. Furthermore, most of the efforts of many scholars looking to explore different paths to social transformation and social impact is focused on the study of social entrepreneurship linking it to a wide spectrum of theories where in most cases are theoretic foundations already established in the study of traditional entrepreneurship.

Little attention has been paid to the potential of social entrepreneurship and social innovation in the context of education. Evidence of this is the distribution of the articles in cluster two, where even though the proportion of articles within this network is even the most cited documents in the cluster continue to fall within the line of social entrepreneurship as an extension of traditional entrepreneurship. In line with this, one of the main findings of (Batista and Helal, 2023) is the fact that studies examining the relationship between social innovation and education show a time gap of 30 years without published research addressing this connection (1984 and 2015). This represents a potential for developing future lines of research on education related to social entrepreneurship and innovation, and the role of educational institutions in promoting social entrepreneurship and social innovation. Approaching research from this perspective may also be relevant for the achievement of sustainable development as it directly impacts the social development goals.

Moreover, when planning to advance theory on social innovation and social entrepreneurship it can be useful to follow the propositions by van der Have and Rubalcaba, (2016) suggesting that regardless of the discipline, any definition of social innovation should take into account that it implies changes in relationships, systems and structures in order to address to solve an important social issue. While it has been suggested that lack of focus in one aspect of social innovation has constrained the possibilities to build deep theoretic foundations for this field, it is also to acknowledge that the

complexity of this phenomenon requires insights from multiple disciplines beyond management, such as psychology, sociology, and education. However, from a management perspective, one possibility to address social innovation research is to consider as a starting point the suggestion by Choi and Majumdar, (2014) where social innovation is part of a cluster of different concepts that define social entrepreneurship.

As a final consideration of this analysis is to highlight that it is necessary for scholars in this area to start digging deeper rather than growing wider to set strong roots for the development of theory in this field. While there is no doubt of the rigor and validity of previous research, it is necessary to start building grounds for further studies using mixed and quantitative methodologies to obtain results that can be generalized.

In summary, the aim of this review was to analyze the intellectual structure of social innovation and identify the most relevant lines of research connected to this concept. In doing so, analyzed bibliometric data using VosViewer to conduct a bibliographic coupling analysis. From the analysis we obtained five clusters. Overall, research on social innovation is highly overlapped with research on social entrepreneurship due to the very thin boundary between these two concepts. In the results, the second cluster stands out for having the highest number of citations compared to the total number of citations in the other clusters. One key finding of this group of articles is that articles on social entrepreneurship overshadow the potential of studying social innovation and social entrepreneurship in the context of education. Furthermore, the discussion of this analysis also brought attention to the need for expanding knowledge on social innovation as a definition within a group of sub concepts of social entrepreneurship.

Research limitations. Among the limitations of these study, it is to note the fact that the selection of the data was restricted to top ranking journals classified as 4 and 4* by the Chartered Association of Business Schools. Even though this inclusion criterion is rigorous in ensuring that the publications selected offer important advancements in their fields, it would be interesting to widen the scope of coverage of the data to include articles published in journals with different ranking levels. In addition to expanding the range of articles to be analyzed, the bibliographic coupling analysis could be complemented with a co-citation analysis to identify not only how the field of social innovation is structured but also to identify the knowledge bases of this topic.

Managerial implications. Our study has implications for the advancement of theory on social innovation that can benefit organizations from different perspectives. New theory on social innovation can have a positive impact on innovation processes within firms looking to achieve social objectives. Moreover, by enhancing collaborations with relevant stakeholders. And finally, it can be useful for strategic decision-making processes while guiding a path to a sustainable business model.

Originality of the paper. Our study is one of the first reviews on social innovation using bibliographic coupling to map the current intellectual structure of this domain. Even though previous reviews of social innovation literature have used bibliometric analysis we found few studies using bibliographic coupling to proxy of the state of the art of their focal domain, however these studies were not focused on social innovation (Mariani et al., 2023).

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Open Innovation Ecosystems support and development: a case-study

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Abstract

Open Innovation Ecosystems are regarded as a subset of Innovation Ecosystems in which all involved actors' primary scope is Open Innovation, and most of the activities carried out by the ecosystem participants are defined as Open Innovation activities. Yet, particular gaps in the literature limit our understanding of how Open Innovation activities can support the development of an ecosystem, especially those activities employed by participants that engage with a large firm or with the ecosystem orchestrator. For this reason, this study aims at exploring the role of ecosystem actors in supporting the development of an Open Innovation Ecosystem. Through an in-depth longitudinal case-study of "ORA! – Outpost Ravenna for Energy Transition", the present study aims to fill this gap by investigating the Open Innovation activity of the ecosystem members that collaborate with Eni, the leading Italian multinational energy company operating in the oil and gas sector, in developing its Open Innovation Ecosystem support initiative.

At the time of writing the study is still in progress.

Key words: *open innovation; ecosystem; process; ecosystem development; support*

Framing of the research. *The concept of Innovation Ecosystem (IE) has gained popularity in the last decades and quickly become a prominent research topic in cross-disciplinary academic literature (Oh et al., 2016; Granstrand and Holgersson, 2020; Alam et al., 2022). IEs originate both from the innovation system (IS) concept, which portrays a set of intertwined components and relations that influence the creation and utilization of innovation and innovative performance (Granstrand and Holgersson, 2020), and from the ecosystem concept, which comes from the science of ecology and represents the flow of material and energy (Shaw and Allen, 2018).*

In response to a call for more conceptual rigor, Granstrand and Holgersson (2020) reviewed the received definitions of IE and related concepts and proposed a new comprehensive definition. Their review suggests that the concept of IE places emphasis on collaboration between actors, value creation and competition. Accordingly, they conceptualize an IE as "the evolving set of actors, activities, and artifacts, and the institutions and relations, including complementary and substitute relations, that are important for the innovative performance of an actor or a population of actors" (Granstrand and Holgersson, 2020, p.3). The important factor that allows to distinguish the IE concept from the IS one, is indeed the collaboration between actors in an ecosystem and their competitive behavior; moreover, ISs are largely based on physical and geographical boundaries, while IEs allow for cross-sectoral and cross-regional exploration of innovation activities (Carlsson et al., 2002; Lundvall, 2007; Grandstrand and Holgersson, 2020; Pushpanathan and Elmquist, 2022).

In the context of IEs, existing research has devoted particular attention to the collaborative arrangements between the networks of actors who share knowledge with the aim of developing innovations (Bacon et al., 2019). Accordingly, innovation activities have seldom been found in isolation; rather, they are part of collaborative changes that happen around a firm's environment and that require collaborative innovation which eventually incorporates the firm into an interdependent IE (Xie and Wang, 2020).

As Alam et al. (2022a) underline, innovation literature has often showed how successful innovations need knowledge, resources and capabilities that come from external sources, and one of the most suitable strategies to meet this challenge is to adopt Open Innovation (OI). OI is defined by Henry Chesbrough (2003; 2012) as an emergent model of innovation by which firms rely on knowledge that arises outside the company's boundaries, and as a process that allows the distribution of innovation through knowledge flows across organizational boundaries. An extensive body of research has investigated the benefits of OI implementation from strategic, managerial, and organizational perspectives (Chesbrough et al., 2006; Enkel et al., 2009; Spender et al., 2017). The benefits of adopting OI include access to external knowledge, lower costs of technology development and improvement, quicker time to market, and higher quality products (Wallin and von Krogh, 2010). The OI process consists of three phases (definition, design, implementation) and involves the identification and the use of resources and ideas that rely

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outside of the firm. It is a process of vision of innovation and organizational capacity to put innovation into practice (Grönlund et al., 2010; Lee and Jung, 2021). An ecosystem consists of a dynamic and interactive connection between the actors, featured by innovative thinking and focused on the creation and diffusion of knowledge. Consequently, firms that engage in a specific ecosystem co-develop and co-create with the actors involved in the same ecosystem and in other ecosystems.

In OI studies, the ecosystem perspective is particularly relevant, since it shifts the focus of analysis from a firm-centric approach to OI, to an approach focused on how the innovation process involves cross-boundaries interactions between actors; therefore, OI studies now adopt the IE concept to explore how a focal firm develops relations with external and interdependent partners (Wikhamn and Styre, 2022). Accordingly, numerous studies now adopt the concept of Open Innovation Ecosystem, which is intended as an IE in which the primary goal of the stakeholders is OI, where a substantial number of the supported activities are OI activities, and in which the primary goal of partner firms is OI (León, 2013; Xie and Wang, 2020; Alam et al., 2022a). The most relevant contributions about OI ecosystems, despite providing a definition, are scattered, and build on diverse theoretical frameworks. For instance, West and Wood (2008) explored the creation and evolution of an OI ecosystem with a longitudinal case study of a mobile operating system developer, and they developed their theoretical framework on value networks, business ecosystems, and their role in OI strategies. Fasnacht (2018), with a focus on value delivery in financial services asserts that, with open interactions of all members and hyperconnectivity, the system becomes an entity full of value; therefore, the collaborative approach to OI allows members to become flexible and agile enough to adopt the proper business model to engage in an ecosystem. In the context of product innovation, Xie and Wang (2020) assert that the modes through which actors engage and interact within OI ecosystems need to be explored; based on grounded theory, they found six innovation ecosystem modes (i.e., firm-university-institute cooperation, inter-firm cooperation, firm-intermediary cooperation, firm-user cooperation, asset divestiture, and technology transfer) and explored how their combination support product innovation. In a subsequent study, the authors define OI ecosystem as “combinations of innovation niches that are filled by linked firms” (Xie and Wang, 2021, p. 1); they build their theoretical framework on innovation niches and ambidextrous innovation to develop and test a conceptual framework to understand the internal mechanisms and contextual conditions in the relationship between a firm’s innovation niche and its exploratory and exploitative innovation (Xie and Wang, 2021). Alam et al. (2022b) use grounded theory method to understand the process by which firms open (i.e., adopt OI practices) to shift from a “closed” ecosystem, to an OI ecosystem, and developed a process of inter-firm openness with implications for the product innovation management.

Purpose of the paper. As previously mentioned, in an OI ecosystem the activities carried out by the actors involved are OI practices, and the primary goal of partner firms and stakeholders is to realize OI. Nevertheless, despite the increasing popularity of the concept, the numerous studies that explore OI ecosystems still lack in providing a comprehensive understanding of the role of OI in supporting the creation and the development of an OI ecosystem. Rather, their focus of analysis is on the main actor of an ecosystem (i.e., large firm or incumbent). Randhawa et al. (2021), for instance, explored the adoption of an “open” business model by a large firm in the medical sector to overcome cognitive constraints and create and capture value with collaborations with multiple stakeholders. Robaczewska et al. (2019) explored the adoption of OI strategies of a multinational firm in the pharmaceutical sector to understand the benefits of OI adoption in its regionally embedded IE. Gionfriddo and Piccaluga (2023) adopted the “Creating Share Value” dynamics lenses to investigate the OI adoption of a big player in the renewable energy sector to achieve social and environmental benefits against climate change.

The main research challenge is to select a setting that could help gaining a better understanding of OI support to ecosystem development considering as unit of analysis all actors involved in an ecosystem, and their contribution to the development of an OI ecosystem. Drawing on the OI paradigm and the resource-based view (RBV), this study aims to understand how the OI activities carried out by the actors in an ecosystem can support the development of it. The resource-based theory defines an organization as a bundle of physical, human capital, and organizational capital resources that must be valuable, rare, and imperfectly inimitable in order to hold the potential of a sustained competitive advantage (Barney, 1991). OI is “the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the market for external use of innovation, respectively” (Chesbrough, 2006, p.1); consequently, the main purpose of adopting OI is to access resources and knowledge. For this reason, the RBV is critical to understanding OI ecosystems (Alam et al., 2022a).

This study aims at developing a process model that explains (1) how actors are involved, collaborate in, and support the development of an OI ecosystem through the implementation of OI practices, and (2) how the ecosystem consequently evolves.

Methodology. To address the research objective, a process approach (Langley, 1999) and a single, in-depth case study (Yin, 2014) have been adopted, for two reasons. First, a “critical case” that is key to investigate the phenomenon illustrated above was selected (Yin, 2014). Second, the research objective requires a longitudinal study (Yin, 2014), which would allow to analyze the evolving nature of the relationships between the actors within the ecosystem. A process approach (Langley, 1999) holds particular significance for the purposes of this study since it allows to elaborate precisely throughout the evolution of the case. Additionally, process data is focused on the evolution over time of something, and the motivations behind its development; accordingly, it mainly consists of narratives about an event with particular attention to the steps, activities and choices that led to it (Langley, 1999).

Following purposeful sampling (Patton, 2014), “ORA! Outpost Ravenna for Energy Transition” is selected as a critical case since it is strategically aligned with the inquiry’s purpose. It is not uncommon in the OI field of research to

adopt purposeful sampling approaches to elaborate theory from information-rich case studies where authors have the possibility to conduct multiple rounds of interviews with a broad spectrum of key informants (Chesbrough et al., 2014; Robaczewska et al., 2019; Randhawa et al., 2021; Wikhamn and Styhre, 2023; Zhao and Yi, 2023; Gionfriddo and Piccaluga, 2023). “ORA!” is a new open innovation ecosystem support initiative to boost innovation within a traditional oil & gas industrial cluster with Eni² as the focal firm. Initiated by Eni and the Municipality of Ravenna in late 2022 with the technical partnership of Mind the Bridge³, it is meant to foster innovation and accelerate the transition towards sustainable energy solutions.

“ORA!” is a significant case for the purposes of this study and constitutes one of the most particular archetypes of OI ecosystem, for many reasons. On the one hand, Eni puts consistent effort in embracing OI. It is among the “100 TOP Corporate Startup Star” and won the “Open Innovation Challengers” prize promoted by the International Chamber of Commerce and Mind the Bridge (Mind the Bridge, 2023). On the other hand, as mentioned, “ORA!” was born from a joint initiative between Eni and the Municipality of Ravenna with a strong international vocation, focusing on technologies for the blue and green economy and, most importantly, with the aim of supporting local business transition and openness. It represents a singular way to allow local Small-to-Medium Enterprises (SMEs) to embark on OI activities. Additionally, the relevance of “ORA!” as a case study arises also from the variety of actors involved that interact and collaborate within the ecosystem. First, the large corporate, Eni, that runs hubs in different Italian regions and fosters entrepreneurship and entrepreneurial culture through “Joule”, the Eni’s school for entrepreneurship. It supports the growth of innovative startups with a strong impact on decarbonization, sustainability, and circular economy through incubation, acceleration, and pilot programs within its network. Second, the Municipality of Ravenna which is actively participating in the development of the ecosystem. Third, local SMEs working in the supply chain of Eni that are trained on methodologies and best practices related to OI, participate in networking activities and working groups and get support in identifying innovation needs and innovative solutions to solve them. Fourth, the University of Bologna (plus other universities in the subsequent editions⁴), whose 8 masters’ students have been selected for supporting Mind the Bridge in the international scouting and support to local companies for the finalization of Proof of Concepts (PoCs). Fifth, international startups and scaleups that have been “matched” with local SMEs. The ultimate goal is to map the innovation needs of local companies operating in strategic industries (chemistry, waste management, carbon capture & storage, energy efficiency and safety, renewables). Once the needs of local companies are mapped, startups and scaleups will be selected to allow local companies to onboard technological innovation mainly through Venture Client model.

Results. The author is involved in the investigation of “ORA!” since its creation, and interviews of involved actors are still in progress. Being “ORA!” in its infancy, results at the time of writing include only the “starting phase” of the activities at the ecosystem level. Data will then be collected longitudinally over the next few years, allowing to conduct a longitudinal in-depth study. Moreover, it is important to underline the uniqueness of the setting under investigation, and, notably, of the primary insights. As mentioned, extant studies on OI ecosystems mainly focus on single-case studies and concentrate on a single firm, on its effort in adopting OI, and on the subsequent ecosystem evolution. In our case, the selected setting constitutes a novelty, and allows the investigation of the creation of an OI support initiative born from the joint agreement between a large firm and a municipality. Furthermore, to the best of our knowledge, this study constitutes the first attempt in considering all ecosystem members (i.e., large firm, SMEs, University, Municipality, startups and scaleups) as units of analysis. In addition, it is important to underline how relevant it is to analyze an ecosystem development initiative since the very beginning of its existence. Not the least, preliminary results suggest that ecosystem support initiative like this strongly facilitate corporate-startup collaborations and SMEs openness. SMEs are resource constrained, and traditionally struggle to engage in OI practices. However, this support initiative appears to be helping them.

Research limitations. The present study is based on the analysis of a single case-study, thereby acknowledging all associated difficulties for generalization. Besides the fact that this qualitative investigation is still in progress (specifically, under the longitudinal perspective), it opens up for further inquiries that could lead to a set of propositions to be investigated with a broader spectrum of cases.

Managerial implications. This study has several important implications for managers and organizations running Open Innovation activities within an ecosystem or planning to implement them. For ecosystem orchestrators, the adoption of OI practices should be organized in way that permits all ecosystem members to profit from open collaborations, with the aim of overcoming the standard way of opening up to OI, allowing all ecosystem members to benefit from the collaboration with startups. Moreover, policies should be implemented to facilitate the creation of joint initiatives with large firms as a way to allow local business to foster entrepreneurship. Successful innovations depend on the availability of complementary and resources and capabilities (Sun et al., 2019); therefore, OI support initiatives devoted to

² Eni is a leading Italian multinational energy company operating in the oil and gas sector. Established in 1953, Eni is one of the world’s largest publicly traded oil and gas companies, with operations spanning across the globe.

³ Founded in 2007, Mind the Bridge (MTB) is a global organization providing innovation advisory services and products for both startups and corporates. MTB’s mission is to foster the creation and development of sustainable and global entrepreneurial ecosystems by offering specific programs designed to unite startups and corporates. In addition, the company regularly publishes research reports on the world of technology scaleups.

⁴ The first round of “ORA!” initiative was successfully concluded; Eni and the Municipality of Ravenna are currently working on the second round. The initiative is intended to become a permanent project.

facilitating knowledge and resource sharing are essential for ecosystem development and support. This study will provide managers with practical evidence on the relevance of an inclusive framework that enables different actors and stakeholders to engage proactively as an effective approach to employ OI and to foster entrepreneurship.

Originality of the paper. As anticipated, the novelty of this study relies on both the case selected and the level of analysis adopted. The selected case provides the opportunity to theorize upon an unusual phenomenon, that is the large firm-municipality joint decision to support their surrounding ecosystem by developing an OI ecosystem support initiative. Accordingly, investigating the adoption of OI by all the actors involved in the ecosystem and the subsequent evolution of the ecosystem provides novel perspective that will contribute to the literature on IEs.

Moreover, OI practices showed to be constantly evolving (Chesbrough, 2017; Vanhaverbeke and Gilsing, 2023), thus requiring to be studied in the moment they are adopted. Accordingly, the present study contributes to the OI field of research by providing novel perspectives on OI implementation and evolution.

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Empowering Digital Entrepreneurship: Regulatory Governance in Platform Ecosystems

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Abstract

In this paper, we investigate the regulatory governance frameworks that can empower digital entrepreneurship and enhance the welfare of entrepreneurs operating on digital platforms. The study explores the complex dynamics of power imbalances within these ecosystems and examines potential regulatory interventions to address them.

Key words: platform; governance; digital entrepreneurship; empowering; business ecosystem

Framing of the research. *The proliferation of digital platforms has revolutionized the entrepreneurial landscape, providing unprecedented opportunities for innovation and value creation. However, these platforms are often characterized by asymmetrical power dynamics, with platform owners exercising significant control over the entrepreneurial endeavors within their ecosystems. This research seeks to understand the structural underpinnings of these power imbalances and identify regulatory mechanisms that can empower entrepreneurs and promote their welfare.*

Purpose of the paper. *The primary objective of this paper is to examine the role of regulatory governance in fostering a more equitable and conducive environment for digital entrepreneurship. Using existing literature, qualitative interviews with entrepreneurs, and analyses of regulatory frameworks, the study provides policymakers, platform owners, and entrepreneurs with actionable insights.*

Methodology. *The methodology is based on a mixed-methods approach that integrates a thorough review of academic literature with qualitative interviews with entrepreneurs. The literature review provides a theoretical framework for understanding the dynamics of digital platforms and entrepreneurship, while the interviews offer practical perspectives on the challenges faced by entrepreneurs within these ecosystems. Regulatory frameworks are analyzed to assess their effectiveness in addressing the identified challenges.*

Results. *The results indicate that entrepreneurs face a significant power imbalance vis-à-vis platform owners, who can impose unilateral changes in competitive conditions on the platform. The power wielded by platform companies stems from the distinctive structural features of the platform, where the owner monopolizes the possession of the technological infrastructure enabling them to build control algorithms overall performance aspects. Given its central position, the platform can determine what information should be provided to any users, and what should not. This ability to analyze, reassemble, and process data and information for the platform allows it to influence interests and actions. Consequently, one of the primary risks confronting entrepreneurs is that the platform owner may decide to compete with them, as they can direct traffic towards their offerings. What further exacerbates power differentials within digital platforms is the largely negative (and possibly enabling in crucial aspects) stance taken by governments in avoiding regulatory oversight and intervention. Thus, the research findings affirm that the presence of advanced forms of regulatory interventions, such as polycentric governance, which considers the horizontal and vertical relationships among different elements, can lead to empowering digital entrepreneurship and enhancing entrepreneurs' well-being.*

Research limitations. *One potential limitation of this research is the scope of regulatory frameworks analyzed, which may not encompass all relevant jurisdictions and platforms. Additionally, the qualitative nature of the interviews may limit the generalizability of the findings. However, efforts will be made to mitigate these limitations through rigorous methodology and triangulation of data sources.*

Managerial implications. *The findings of this research will have important implications for policymakers, platform owners, and entrepreneurs. Policymakers will gain insights into the regulatory interventions needed to foster a more inclusive and competitive digital entrepreneurship ecosystem. Platform owners will understand the importance of governance mechanisms in promoting entrepreneurship and innovation, while entrepreneurs will receive guidance on navigating the regulatory landscape and advocating for their interests.*

Originality of the paper. *This paper contributes to the existing literature by synthesizing academic research with practical perspectives from entrepreneurs, offering a comprehensive analysis of the regulatory governance frameworks*

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needed to empower digital entrepreneurship. By bridging the gap between theory and practice, this research provides original insights and actionable recommendations for promoting entrepreneurship and improving the welfare of entrepreneurs within digital platforms.

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The Governance of Entrepreneurial Ecosystems: Ecosystem Manager or Ecosystem Act?

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Abstract

While different studies enriched our knowledge of the entrepreneurial ecosystem (EE) framework, with insights concerning an EE's definition, theoretical constructs, constitutive elements, structure, and processes, the development of EEs remains a tricky challenge for both researchers and practitioners, as many debates and unanswered questions still inhabit the literature. Among those, there are still relevant questions regarding an ecosystem's evolution and governance, which prevent us from fully understanding the dynamics that underlie an EE's development. Especially, some related concepts seem to be either misused, used too loosely or in contrasting ways, requiring therefore better conceptualization.

The aim of this paper, thus, is to provide more clarity in the literature by problematizing the concepts of governance and management in EEs, so to provide new points of view for future research on an ecosystem's development and evolution. Our preliminary findings show that the necessity for management and governance reside intrinsically in the EE definition, given the need for coordination and monitoring to guarantee its sustainability. As meta-organizations, then, EEs, not only need governance but, most of all, need the responsibility for its monitoring and maintenance to be democratically assigned.

Keywords: entrepreneurial ecosystem; governance; management; problematization; ecosystem development.

Framing of the research. In the last twenty years, the framework of entrepreneurial ecosystems (EEs) has emerged as a theory and tool to explain the mechanisms behind economic growth at the regional level concerning entrepreneurship and innovation development processes (Alvedalen & Boschma, 2017; Cavallo et al., 2019; Cao et al., 2021; Thai et al., 2023). In particular, the framework tries to do that by describing how different actors, factors, artifacts, and the relations between them can foster the development of high-growth entrepreneurship in a defined region.

In view of the growing problem of disparity in terms of economic and social development between different geographical areas (World Economic Forum, 2024) and given that the increasing pace of technological progress is creating the need, for regional and national governments, to be able to exploit the potential of innovation to the fullest in order to ensure the competitiveness of their territories (Johannessen & Sætersdal, 2020), the creation of EEs has become a policy priority for governments around the world.

As of today, different studies advanced the literature for what concerns an EE's definition and theoretical constructs (Isenberg, 2010; Mason and Brown, 2014; Acs et al., 2017; Brown & Mason, 2017; O'Connor et al., 2018), constitutive elements and structure (Stam, 2015; Adner, 2017; Carayannis et al., 2017; Stam & Van De Ven, 2021), and processes (Dubina et al., 2016; Spigel, 2017; Spigel & Harrison, 2018; Wurth et al., 2023).

Despite the progress made by academics, however, the development of EEs remains a tricky challenge for both researchers and practitioners, as many debates and unanswered questions still inhabit the literature (Cavallo et al., 2019; Wurth et al., 2022; Cho et al., 2022).

Among those, there are still relevant questions regarding an ecosystem's evolution (Cho et al., 2022) and governance (Colombo et al., 2019), which prevent us from fully understanding what are the dynamics that underlie the development of a successful EE, and who should play the management role.

On the one hand, indeed, some studies offered ideas about the possible evolutionary processes of entrepreneurial ecosystems, although leaving little room for operationalization in the concepts, as they slightly link them to the phenomenon of planning and governance (Mack & Mayer, 2016; Kantis & Federico, 2020; Cantner et al., 2021) apart from Cho et al. (2022).

On the other hand, the literature is contrasting in its opinions regarding the type(s) of governance and governance approaches which characterize EEs: formal and informal, top-down and bottom-up, relational and/or hierarchical, fixed in time or evolving (Colombelli et al., 2019; Colombo et al., 2019; Cunningham et al., 2019; Scott et al., 2022). Such studies, in fact, slightly address the issue of the development of entrepreneurial ecosystems, which still remains a blurry

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problem both to practitioners, policymakers and academics. Moreover, they do not seem to agree regarding both the necessity for and possibility of management as well as the responsibility for management by ecosystem actors.

Considering these issues, then, what the presence of many different points of view on the topic tells us is that there is still a need for a solid conceptual clarification regarding the manageability of an EE, as well as an adequate definition and delegation of responsibility for governance in this sense. Concerns, these, which have a major role in defining a solid basis for the developmental and evolutionary dynamics of EEs, especially given the call for more empirical works in the field.

Purpose of the paper. The purpose of this conceptual work, then, is to fill this gap and advance the knowledge regarding the development of EEs by problematizing the concept of their governance and management. In order to do that, we first make clarity on the definition of entrepreneurial ecosystems, by critically analyzing it, and after that questioning whether an EE can or should be managed, who should eventually be responsible for its management (as well as what should be the configuration of governance for EEs), and how responsibility for performance can be and should be distributed in the entrepreneurial ecosystem.

In particular, given the abundance of papers that consider as given both the possibility of governance and the possibility for some of the organizations of the quadruple helix (Carayannis & Campbell, 2009) to “orchestrate” the ecosystem, the study tries to understand whether a sort of “Ecosystem Manager” (or orchestrator) or an “Ecosystem Act” (or act of taking responsibility) result necessary for the development of entrepreneurial ecosystems.

Methodology. For the purpose of this paper, we follow a multistage process, following Alvesson & Sandberg (2010; 2020) which consider six steps for the problematizing review: 1. Identify a domain of literature; 2. Identify and articulate assumptions; 3. Evaluate articulated assumptions; 4. Develop alternative assumptions; 5. Consider assumptions in relation to the audience; 6. Evaluate the alternative assumption ground.

Especially, it proceeds by “[...] reading broadly, but selectively [...]”, challenging points of departure in the literature, and carefully analyzing a small number of selected high-quality studies that cover a broad range of topics.

That being said, given the complexity of the ecosystem concept, and taking inspiration from Laasch et al. (2020) and Alvesson & Blom (2022), who highlight the necessity to shed light on some big, ambiguous concepts in order to make clarity in the research field, we carry out a preliminary stage which focuses on making clarity on the definition of entrepreneurial ecosystems, which allows us to identify precisely the domain literature and to identify and articulate assumptions.

In particular, for this preliminary stage regarding the definition of entrepreneurial ecosystem, we take inspiration from Laasch et al. (2020) for the identification of domains, and we begin by adopting a systematic approach in order to be able to find the most adopted definition and “dissect” it, to identify the domains and the main assumption regarding the manageability of the EE and critically commenting them in order to develop alternative assumptions, which might take different paths depending on the results.

In this regard, we follow the process suggested by Tranfield et al. (2003), which involves three main phases of: 1) planning of the review (for which the need had already been previously identified and a proposal made) through the definition of a clear research protocol; 2) conducting the review, through the application of the research protocol, leads to the identification of publications and the selection of studies to be included in the review on the basis of the inclusion and exclusion criteria specified in the research protocol; 3) reporting and dissemination, through a detailed analysis of the publications included in the sample.

Considering the pertinence, we applied a multistage process similar to that of Wurth et al. (2022), but with some differences. First of all, unlike these authors, the selected database was Scopus. In this regard, although both Web of Science and Scopus represent the most widely used databases for bibliographic analysis, the latter is a better option in terms of the inclusiveness of the database, the user-friendliness of the interface, and wider and easier access to metrics that are more reliable and less susceptible to manipulation than Web of Science (Pranckutė, 2021).

Secondly, unlike the other authors, given the objective of this stage of analysis to understand the specific definition of entrepreneurial ecosystem, we focused exclusively on the concept of entrepreneurial ecosystem without including related concepts. In this sense, we refer to similar concepts such as the “startup ecosystem”, the “entrepreneurial system”, the “entrepreneurship system,” or the “system of entrepreneurship.” Therefore, the search by topic (title, abstract, keywords) was developed using a single keyword: “entrepreneur* ecosystem*.” The keyword has been defined in this way in order to include both the term “entrepreneurship ecosystem” and the term “entrepreneurial ecosystem”. The result was an initial sample of 2245 items in the period between 2006 and 2024. Of these, 1444 are journal articles, 56 books, 389 book chapters, 248 conference papers, 17 conference reviews, 54 reviews, 16 editorials and 21 data papers, erratum, letters, notes, and retracted articles. As in Wurth et al. (2022) we excluded books, book chapters, conference reviews and the 21 other items. In addition, we have excluded all releases that are not in English (49 records). This process left a total of 1713 articles, including journal articles, conference papers, reviews, and editorials.

We included not only journal articles, but also the remaining publications because, although the interest was to select high-quality publications, we were also interested in selecting publications that are as accepted and approved as possible by academics, considering that the subsequent steps would allow for further exclusion.

The second phase, on the other hand, follows precisely Wurth et al. (2022) and concerns the application of exclusion criteria based on the journal of publication. Therefore, the Scimago Journal Rankings were used in the latest 2022 edition. To select the most relevant journals, the top 25% of the journals in the following areas were selected: Business and International Management; Business, Management, and Accounting Miscellaneous; Management of Technology and Innovation; Strategy and Management; Economics, Econometrics, and Finance Miscellaneous; Economics and

Econometrics; Geography, Planning and Development; Social Sciences Miscellaneous; and Urban Studies.

This step is essential to include a more significant number of articles related to the areas that affect the concept of entrepreneurial ecosystem and, on the other hand, to ensure a higher scientific quality of the items in the database. This step, thus, resulted in a sample of 741 journals, of which 113 were represented within our initial sample.

In particular, it should be noted that to select the relevant journals, a comparison was also made between the Journals present within the sample that emerged from the selection and the ones present within the sample of articles found on Scopus. Taking into account that - at this stage of analysis - the objective of the systematic review is to identify the most influential and important articles in the literature on entrepreneurial ecosystems in order to extrapolate an integral definition, this comparison has also made it possible to include a tiny number of journals that, on the one hand, within the Scimago database are Q2, but have a ranking that includes them in the top 25% of the journals with the highest ranking. On the other hand, these journals are those in which some very relevant articles for reading ecosystems have been published. Finally, another addition was that of a journal that does not fall within the previously selected categories but within the marketing area (i.e., *Journal of Business Research*). This process then led to the selection of an intermediate sample of 652 articles.

Finally, further exclusion criteria were applied. First, we excluded all publications that do not explicitly reference the entrepreneurial ecosystem concept but use it only as the context in which the object of their research took place. Second, publications that refer to other constructs, such as the innovation ecosystem, digital entrepreneurial ecosystem, and sustainable entrepreneurial ecosystem, were excluded as well. Third, non-conceptual publications and all publications that did not have any definition of an entrepreneurial ecosystem were excluded. This process led to the definition of a final sample of 65 publications between 2006 and 2024.

Based on the sample emerging from the selection, the text was analyzed by first grouping the recurrent definitions, following some of the scrutiny methodologies presented by Ryan et al. (2003), and then conducting a critical analysis of the results. For what concerns the scrutiny process, first, we have been looking for repetitions between different definitions - and therefore, “[...] ‘topics that occur and reoccur’ [...] or are ‘recurring regularities’ [...]” (Ryan et al., 2003) - and then, net of repetitions, we proceeded to look for similarities and differences between the definitions. This analysis made it possible to identify the recurring and the less recurring themes to create an integrated definition.

Thanks to this process, we were able to: 1) reconstruct an entrepreneurial ecosystem definition; 2) “dissect” it and analyze it based on the recurring themes in order to identify the domains; 3) begin to critically comment on its components in order to find the necessity for governance in the definition and also understanding the main domain areas.

After this process, following Alvesson & Sandberg (2010; 2020), the paper will continue by selecting a few works included in the domain areas of the EE concept, consequently identifying the main assumptions regarding governance and management in an ecosystem, and evaluating them.

Finally, the paper will conclude with new research questions spinning out from the alternative assumption ground.

Results. Our preliminary results regarding the first stage of our problematizing review show that the most comprehensive and synthetic definition of EE is the one introduced by Stam (2015) and then updated by Kuratko et al. (2017). Moreover, from the comprehensive analysis of the definitions, among the different components we can highlight three main activities (or functions) that ecosystem actors and factors should perform: creating a favorable environment for productive entrepreneurship to proliferate, monitoring performance, and coordinating activities.

Considering this, then, although labeling entrepreneurial ecosystems as “organizations” is a conceptual extension, EEs can be conceptualized as “meta-organizations” that not only need governance but, above all, need someone who takes care of its monitoring and maintenance of the “ecosystem” organization: that is, a manager.

Research limitations. Although the study is in its early stages, the main limitations are linked to the lack of empirical and longitudinal studies in the sample of papers, which only allows us to work on hypotheses rather than facts. Moreover, given the small number of papers on which the problematizing review should be carried out (in the second phase of the review), the paper might exclude valuable works that could allow better conceptualization.

Managerial implications. Governance and management are the two main topics that allow the entrepreneurial ecosystem research to be operationalized. The development of entrepreneurial ecosystems, indeed, depends not only on our knowledge of “what” should be developed, and “how” and “when” to do it, but most of all on “who” should do it. Policymakers and top managers from organizations attaining the “quadruple helix” actors can benefit from this study by first understanding that an ecosystem should not only be managed but, most of all can be. Secondly, policymakers could use this study to direct funds and policies to the development of the type of organization that could be responsible for the development of an entrepreneurial ecosystem. Also, top managers from organizations in an entrepreneurial ecosystem could understand whether to redirect their investments in an ecosystem’s development, persevere in them, or create totally new organizations in order to reach this goal.

Finally, the paper has the potential to advance the literature regarding entrepreneurial ecosystems and, most of all, open new research avenues for what concerns an ecosystem’s development. The problematization, indeed, both makes clarity on the previous debates and inconsistencies and makes space for new avenues of research. In this case, given the early stage of the study, the preliminary results show that the study could help clearing the path for new studies concerning governance in entrepreneurial ecosystems.

Originality of the paper. As of today, while the literature of entrepreneurial ecosystems advanced with a wealth of studies, few of them critically reviewed the field (Alvedalen & Boschma, 2017; Brown & Mason, 2017; Cavallo et al.,

2019), mainly focusing on the difference between older or similar concepts. However, they did not focus on specific areas of the ecosystem concept (as in the case of governance) or systematically analyze the use of the definition in the literature. In this particular case, as anticipated earlier in the text, while other researchers introduced different views on governance and management in an entrepreneurial ecosystem, either setting governance as the main subject of the study or including governance in the discussions, they not only proposed different approaches but most of all seemingly gave for granted some considerations regarding governance, that instead are the main subject of this paper.

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A comprehensive exploration of the knowns and unknowns of Private Equity Secondary Markets

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Abstract

In parallel with the growth of primary Private Equity (PE) markets, secondary markets have emerged as a tool to provide liquidity to Limited Partners. Over the last years, a decrease in exit activities implied more difficulties for General Partners to distribute liquidity to their investors, thus driving to a higher demand for secondary markets.

This work aims to provide a comprehensive and systematic review of what has already emerged from academic studies and practitioner reports and to highlight current knowledge gaps, to propose several valuable research directions and to inform stakeholders of managerial implication related to this market.

Key words: private equity; venture capital; secondary markets; illiquidity; LP-led; GP-led

Framing of the research. Private equity funds are typically based on a contractual agreement between a General Partner (GP), who manages the fund and makes the investments, and Limited Partners (LPs), who agree to provide capital on demand to the GP. The lifecycle of a typical PE fund is usually 10 years or more, which implies that investors must commit capital and are generally locked up for the fund's entire life (Nadauld et al., 2019). However, LPs might wish to exit earlier on, if they need to rebalance their portfolios, external events (for instance a decline in public listings) leave them over-allocated to the PE asset class (denominator effect) or to reduce non-core managers or strategies or re-deploy to new vintages (Boyer et al., 2023, Albuquerque et al., 2018). Secondary markets then step in as a tool to provide liquidity to LPs.

Following an explosive growth of the primary private equity industry, which reached over \$20 trillion in assets under management globally (Bain, 2024), the secondary market experienced a substantial increase (Jefferies, 2024). Besides this, PE has encountered difficulties in distributing liquidity to LPs in recent years due to a sharp slowdown in exit paths, less than half the proportion of five years ago (Preqin, 2024). Currently, the unrealized value amounts to \$3.2 trillion and consists of 28,000 unsold companies, more than 40% of which are four years old or older, generating a liquidity problem (Bain, 2024). Fewer exit opportunities, in turn, lead to decreased distributions for LPs, thereby creating a challenging fundraising landscape.

In this regard, the secondary market plays a vital role for both GPs and LPs, providing an array of tools that they can use to manage their own liquidity needs as well as those of their stakeholders. Although the secondary market represents only 4 percent of the total capital raised by the PE industry as a whole in the last 15 years and currently deploys about \$100 billion of liquidity annually, the market is expected to continue to grow in the next years (Jefferies, 2024). Indeed, secondary funds raised 92% more capital in 2023 than they did in 2022 (Bain, 2024) and invested 4% more in 2023 compared to 2022, reaching \$112 billion (Jefferies, 2024), as shown in figure 1.

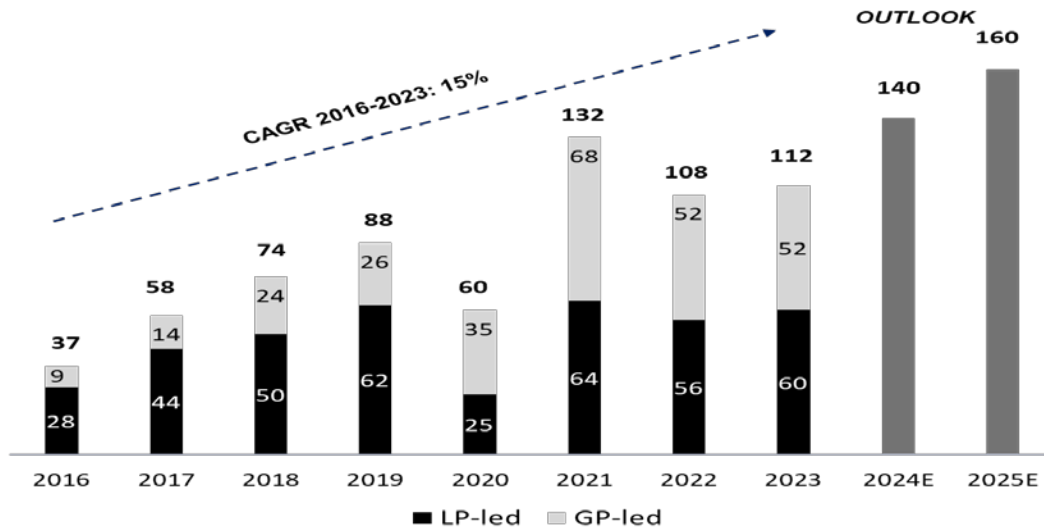
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Figure 1. Private Equity secondary market investments (mld, \$)



Source: Personal elaboration on public data

PE secondary markets are usually characterised by two sub-strategies: (i) LP-led deals, i.e. a transaction in which a LP sells its stake in a (multiple) PE fund(s) to a secondary buyer, which replaces him in both duties and rights, and (ii) GP-led deals, which are originated directly by the PE sponsor and are aimed at reorganizing their portfolios while offering liquidity solutions to their current LPs.

Purpose of the paper. The present systematic review, which is still a work in progress, moves initial steps in reorganizing existing literature by detecting thematic connections and highlighting uncovered issues deserving further attention. More specifically, this research aims to contribute to the academic understanding of the secondary market in private equity and to provide valuable insights from current existing literature. This review provides a comprehensive and detailed overview of what has emerged in the outlined areas from academic and practitioner sides. This effort marks a crucial move towards bridging the current knowledge gaps, making a significant contribution to the scholarly dialogue, and proposing a valuable research direction for further investigations in the evolving landscape of the private equity secondary market.

Methodology. Our research has been developed through a systematic review of existing academic literature as well as of “grey literature” and practitioners reports. We also interviewed some senior PE secondary managers to understand principal topics and to validate our insights and future research directions.

Despite the growth of the market, academic research on the topic is scarce, in particular on GP-led transactions.

This gap represents a distinctive opportunity to contribute to the existing body of knowledge, providing new perspectives and interesting research insights.

In this regard, we developed a comprehensive review that not only sheds light on the complexities of this dynamic market but also highlights its potential as a rich line of inquiry, marking a significant contribution to the field.

In the initial phase of our exploration, we selected the most relevant research articles on the secondary market in private equity retrieved by different database such as Scopus repository, Web of Science, SSRN and Google Scholar.

This analysis unveiled that the academic literature has predominantly focused on LP-led transactions, underscoring the pivotal role of secondary market for PE investors. To broaden our understanding and capture other significant emerging evidence in this area, we include in our research the analysis of key market reports provided by leading industry players. This extension of our analysis revealed that the transactions led by General Partners (GP-led transactions) have begun to represent half of the market, while being quite entirely understudied.

Furthermore, to depict some preliminary evidence on secondary players performance, we retrieved data from publicly available sources and manually assembled to build the final sample of 192 observations. Each of them represents a PE fund active in the secondaries market with year of final close between 2000 and 2023, with details on geographical location, fundraising activity, and performance of 192 funds managed by 54 GPs at the global level.

Results. PE secondary markets in origin were composed almost exclusively of LP-led deals, i.e. a transaction in which a LP sells its stake in a (multiple) PE fund(s) to a secondary buyer, which replaces him in both duties and rights, i.e. obligations for remaining capital calls as well as being entitled to receive future distributions (Mason & Utke, 2023; InvestEurope).

Following the growth of LP-led deals in the last decade, which also surged after the global financial crisis, few academic studies studied specifically this segment of the market. Secondary buyers are seen as a provider of liquidity to selling LPs, typically in exchange for an “illiquidity” premium: they buy from sellers at a discount on NAVs, which is higher in crisis times (Hege & Nuti, 2011) or when the demand for liquidity exceeds the supply, and outperform sellers by a market-adjusted 5 percentage points annually (Nadauld et al. 2019).

Determinants of illiquidity in the secondary market are explained by specific fund characteristics that make its LPs more vulnerable in case of liquidity shocks. For instance, lower bids (i.e. higher discounts on NAVs) are associated to

young funds, which present the highest risk of funding future capital calls (Albuquerque et al, 2019), whereas larger buyout funds with smaller remaining commitments and larger remaining distributions have higher secondary market demand (i.e., lower discounts) (Kleymenova et al, 2012). Furthermore, fiscal policies also affect the size of the illiquidity discount, as different legal structures of PE funds and different jurisdictions can affect the magnitude of the tax discount (Mason & Utke, 2023).

On the contrary, there is almost no academic research on GP-led deals, which are a relatively new market phenomenon (Mason et al., 2023). Unlike LP-led transactions, GP-led deals originate directly from GPs, which aim primarily at reorganizing one or more funds under their control while offering liquidity solutions to the current LPs.

Although GP-led secondary transactions include different strategies (team spinoffs with assets, portfolio strip sale, tender offer, preferred equity) that have been used in the industry for more than 15 years, over the last few years continuation funds have become the most common structure. Continuation Funds (CFs) address situations where an asset (single-asset Continuation Fund) or a collection of assets (multi-asset Continuation Fund) are transferred from the original fund into a Continuation Fund managed by the same GP (Gottschalg 2023). The latter transfers assets from the original private equity fund to a new continuation fund at a discount. Although LPs have the option of leaving the primary fund, they are often offered the opportunity to reinvest in the continuation fund. The practice of rolling portfolio assets into so-called continuation funds offers the opportunity to LPs to continue investing in portfolio companies whose potential might be further exploited and gain an incremental return on the initial investment. However, it might also be argued that GP-led deals represent a “last-resort” exit route to distribute cash to their LPs, when other exit strategies are not viable due to external market conditions.

Notwithstanding the empirical relevance of the topic, several potential research questions on GP-led deals (pricing, performance, value creation, conflict of interests among stakeholders) remain unanswered so far.

In terms of pricing compared to NAVs, LP-led deals usually report higher discounts than GP-led deals. Among the latter, single-asset CF report lower discount to NAV than multi-asset due to their quality. The demand for quality over diversification is evident in the success of single-asset transactions, indicating that while these deals may not explicitly carry a “control premium” like in strategic sales, the quality of the underlying asset and alignment with GPs can drive favourable pricing (Farman 2023).

Bearing this in mind, empirical studies should appraise if the price paid for portfolio companies in GP-led transactions is close to the NAV and which are the main determinants of such a price.

Performance-wise, some market participants may have historically viewed GP-led transactions as a way for underperforming managers to extend the life of their holdings while distributing cash to original LPs. However, a recent white paper (HEC, 2024) find that CFs perform in line with buyout funds, with a lower dispersion of performance. This is consistent with the view that the portfolio companies transferred to the CFs are already known by the GP and management team and has already proven to perform well, hence generating less risky outcomes. Moreover, multi-asset GP-led deals should offer more diversification and risk-adjusted returns and share more similarities with LP-led transactions, as it is a way for the GP to anticipate the liquidity needs of its LPs.

Overall, private equity funds’ NAVs are not objective market-based values but can be subject to GPs manipulations (Nadauld et al, 2019). This leads to the necessity to perform a comparison of annualized returns of sellers and buyers also for GP-led deals, following the methodology of Nadauld et al. 2019 for LP-led deals.

The continuation vehicle typically resets the fund term and includes a new incentive structure for the GP in order to maximize alignment with the new LPs of the continuation fund. In almost cases, the GPs are typically requested to roll over 100% of their carried interest accrued into the new vehicle and to directly contribute with their cash in a higher proportion compared to the one usually asked for primary deals, to ensure an alignment of interest. LPs of the continuation fund want to see that the GP behaves as a “net” buyer in the transaction. In situations where the GP does not reinvest their entire carried interest into the new fund, it should offer a thorough justification for not transferring their full earned carried interest (ILPA 2023). This entails questions on potential different outcomes and conflict of interest around this topic.

From LPs’ viewpoint, the secondary buyers involved in CFs, especially single-asset, can benefit from the GP’s knowledge of the underlying asset, collaborate with the GP to further enhance the value of the asset and negotiate deal terms that more closely align the interests. This can reduce information asymmetry compared to commitments to primary buyout funds, while at the same time reducing diversification, and this can raise questions on the characteristics of LPs interested in these markets, their strategy and their business model.

The operating performance of portfolio companies transferred to CFs is another area of research deserving attention: do GPs transfer companies where value creation has not been fully reached and will be very high in the future, or is this transfer mainly realized to reach an exit, independent of adverse market conditions in the IPO market or the debt capital markets, for the existing LPs? Future studies should investigate if the operating performance of portfolio companies in the CFs is comparable or even higher to that reached during the holding period in the primary fund. CFs, in particular single-asset, could be closely compared to secondary buyouts (SBO). Academic literature previously focused on the operating performance of portfolio companies subject to SBO transactions, which involve portfolio companies sold from one GP to a different GP, finding that secondary buyouts display operational performance improvements comparable to

those of primary buyouts (Achleitner & Figge, 2012) and not significantly different from that of the peer group (Bonini, 2015).

Furthermore, more drivers of GPs willingness to realize continuation funds should be explored. For instance, future research could explore whether GPs who are in the process of fundraising a new fund are more inclined to initiate GP-led transactions on its previous fund, as this could help to improve their performance measures (i.e. DPI) and thus improve their likelihood to fundraise.

We also provide some preliminary general insights on the distribution and variability of performance data of secondary deals. Summary statistics for fund-level fundraising activity and performance are displayed below (Table 1).

Table 1. Summary statistics.

Variables	Obs.	Mean	Std. Dev.	Min.	p25	Median	p75	Max.
Funds raised (M; \$)	192	2,090.14	3,303.08	16	364.05	837.5	2,455	22,700
IRR	192	0.18	0.17	-0.32	0.09	0.15	0.23	1.30
TVPI	184	1.57	0.61	0	1.30	1.49	1.68	5.84
DPI	184	0.96	0.65	0	0.38	1.01	1.43	4.02

As emerges from Table 1, observed funds display wide variability in terms of fundraising activity. Overall, the mean raised amount totals \$2,090 M, ranging from a minimum of \$16 M to a maximum of \$22,700 M. The large gap between these two points and the high standard deviation indicates that fundraising activity suffers from substantial variation. Moreover, by comparing the mean with the median, we can easily see that the distribution of raised funds in our sample is positively skewed, suggesting that most funds have collected relatively small amounts while a few of them have attracted significant capitals from investors.

This trend may be partially explained by the high concentration of the secondaries market. Indeed, our analyses reveal that more than 50% of the total funds with available data with vintages between 2000 and 2023 are managed by only 4 out of 54 GPs.

As to performance, observed funds report an average IRR equal to 18%, with substantial fluctuations in the period considered. From Table 2, it is possible to clearly discern the evolution of fund returns across the different phases of the secondaries market, looking at different vintages. Throughout the 2000s, namely the decade in which the industry was dominated by LP-led deals, the average yearly IRR decreased, as more buyers approached the market and discounts on NAV narrowed, thus increasing competition, and offering more bargaining power to the seller.

Then, the mean funds' performance started to increase again around the year 2009, when the effects of the global financial crisis implied that more sellers approached the secondary markets. Starting from 2016-2017, when GP-led deals started to grow, returns of secondary funds started to increase as well as standard deviation. This is coherent with intrinsic characteristics of GP-led deals compared to LP-led, as the former should generate higher returns and greater risk as it entails less diversification. Eventually, data of the last 3 years show that the demand for liquidity of LPs grew due to fewer exit and distributions, with a stronger purchase power for secondary buyers reflected in higher returns.

Table 2. Evolution of IRR of secondary funds over time

Year	Mean	Std. Dev.	Min.	p25	Median	p75	Max.
2000	0.19	0.13	0.08	0.08	0.16	0.34	0.34
2001	0.12	0.11	0.04	0.04	0.12	0.20	0.20
2002	0.14	0.04	0.12	0.12	0.12	0.20	0.20
2003	0.25	0.09	0.19	0.19	0.20	0.35	0.35
2004	0.07	0.19	-0.10	-0.09	0.07	0.24	0.25
2005	0.03	0.06	-0.07	-0.01	0.05	0.06	0.11
2006	0.04	0.02	0.02	0.03	0.04	0.06	0.06
2007	0.06	0.07	-0.04	-0.01	0.07	0.13	0.15
2008	0.08	0.06	0.00	0.01	0.11	0.12	0.14
2009	0.14	0.07	0.08	0.09	0.13	0.14	0.29
2010	0.09	0.07	-0.02	0.05	0.09	0.15	0.19
2011	0.13	0.04	0.07	0.09	0.14	0.17	0.19
2012	0.19	0.10	0.07	0.14	0.15	0.21	0.41
2013	0.16	0.11	0.06	0.07	0.13	0.20	0.39
2014	0.16	0.10	0.08	0.10	0.12	0.17	0.41
2015	0.12	0.04	0.06	0.06	0.14	0.16	0.17
2016	0.21	0.14	0.07	0.15	0.17	0.22	0.69
2017	0.20	0.11	0.00	0.15	0.18	0.23	0.45
2018	0.21	0.10	0.08	0.12	0.18	0.27	0.37
2019	0.25	0.12	0.12	0.16	0.21	0.32	0.49
2020	0.29	0.21	0.03	0.17	0.28	0.35	0.91
2021	0.32	0.21	0.09	0.20	0.26	0.34	0.75
2022	0.12	0.38	-0.32	-0.32	0.33	0.35	0.35
2023	0.40	0.44	0.03	0.07	0.23	0.60	1.30

Research limitations. *The present research aims to investigate an entirely new line of research that finds no relevant studies in extant literature. For this reason, to collect a substantial but still a small number of papers, we used various databases such as (Scopus Repository, Web of Science, Google Scholar, and SSRN) combined with market reports and grey literature to get an overview of the research topic even on the practitioner side. Given the scarcity of current studies, the literature review presented here may not be exhaustive. This may leave several relevant open questions in addition to those emerging from the analysis. Given these premises, our objective was to collect initial insights regarding any aspect of this dynamic market, to provide other researchers with a comprehensive view of the market trend and give evidence of interesting future research insights to be further investigated.*

Managerial implications. *Private Equity secondary markets are intended to provide liquidity as well as strategic options to both LPs and GPs. As a relatively new and growing industry, few studies have been conducted so far. Nevertheless, the topic deserves attention as it has managerial implications for several stakeholders of the PE industry.*

First, LPs have historically embraced secondaries to rebalance portfolio exposure across strategies, geographies, vintages, and funds by selling their stakes in funds that no longer align with their current investment strategy or diversification objectives. Academic studies on LP-led deals show that secondary buyers typically outperform sellers, by buying at NAV discounts. On the contrary, there are no findings on the performance on continuation funds compared to original buyout funds. Further information on the performance of secondary deals is important for LPs to take informed decisions. Moreover, LPs need to understand different characteristics and business models of different sub-strategies of secondary buyers. Indeed, secondaries buyers executing LP-led deals should buy portfolios of LP stakes which entails portfolio companies close to an exit and thus should distribute in short time cash flows, whereas GP-led deals have a different rationale, in particular when looking at single-asset deals, as one would expect that the transferred asset would be held by the GP for another 4-5 years (a new holding period) in order to leverage on the yet unrealized value, and so LPs investing in secondary funds with this strategy should not expect distributions in short time.

An efficient secondary market would be particularly beneficial, besides LPs, for its implications for the venture capital asset class. Indeed, the surge in primary VC fundraising has allowed companies to stay private for longer because they can still raise ample cash without the full extent of the regulatory oversight and reporting requirements of the public market. Consequently, early investors, founders, and employees receiving company stock options in the early stage of the company face increasing difficulties in getting liquidity. Venture capital secondaries can be a way for venture-backed securities to solve this issue while remaining private.

From a GP perspective, secondary markets have played the role of providing ways to handle liquidity issues of LPs as well as rebalancing portfolios. In general terms, PE investors have a strong incentive to exit companies, which is driven by their compensation package, as their performance bonus (carried interest) is dependent on realized distributions to LPs and not on NAVs as it is for hedge funds' managers. The decision to roll-over their carried interest in a continuation fund, as well as providing relatively high new equity commitment to show to new LPs their commitment, is a pivotal choice that should be guided by the awareness of the still unrealized value in portfolio companies, or by a strong pressure from the LPs of the primary fund to receive distributions and the unavailability of other exit strategies. Additionally, through secondary transactions, especially those led by GPs, the alignment of interests between GPs and new LPs can be facilitated, with the former often reinvesting a significant portion of their accrued interest in the new vehicle.

For entrepreneurs interested in accessing PE, the institutionalization of an efficient GP-led market might be seen as a tool that reduces the perception and the risk to be forced by the GP to an external sale within about a 5-year period, avoiding the organizational and managerial consequences that a new buyer would imply, because the GP would have more flexibility to hold stakes longer if a growth path is undergoing.

Moreover, efficient secondary markets would have an impact on individuals. As the PE industry is growing, also the exposure of individuals on the asset class is booming, and the emerging of new digital platforms could accelerate this trend. However, one of the major issues for this “democratization” of the asset class is its intrinsic illiquidity, which can be improved by secondary markets.

From an industry perspective, the growth of AI could drive a boom for the industry. Since LP-led deals have an intensive data-driven process, it can be massively accelerated and automatized, decreasing the costs of due diligence, limiting human errors, improving efficiencies, and allowing secondary buyers to get more exposure to transactions.

From a policymaker perspective, the growth of PE secondary markets and over the last years of GP-led secondary transactions has attracted regulatory interest. As secondary markets entail potential asymmetry of information and conflicts of interest among various stakeholders, regulations should deal with the price-formation and fair-value appraisal of the deals.

Originality of the paper. *The research focuses on the PE secondary market that has not been extensively explored in academic literature. While LP-led deals have received considerable attention, GP-led transactions, the dynamics of liquidity provision, and the strategic motivations behind LPs' and GPs' participation, remain less examined. By delving into this understudied area, the paper addresses a gap in the current body of knowledge, offering insights into the complexities and nuances of secondary markets that are not widely investigated. This review opens multiple avenues for future research, serving as a catalyst for further investigation and contribution to the field.*

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Unveiling the Pitfalls of Entrepreneurial Team Diversity: Insight from a post-mortem analysis of failed start-ups

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Abstract

Entrepreneurial teams have received increasing attention in the academic debate. Diversity has been identified as one of the key characteristics that have a significant impact on start-up performance, being a double-edged sword. Despite the continuing interest in the topic, some questions remain unsolved. Existing studies provided more and more robust evidence for the positive effects of diversity than the negative ones. In addition, the relationship between diversity and performance has always been analyzed as static rather than dynamic, with a lack of research considering the stages of start-up development when analyzing the negative effects. To fill this gap, we aim to investigate which team diversity characteristics lead to start-up failure, considering the different stages of development. Based on interviews with founders of failed start-ups collected on the Failory database and applying a post-mortem analysis, we found that age, passion, vision, focus, and motivation diversity are the most critical factors in the transition of start-ups from one stage of development to another contributing to their failure. Our study provides a wide range of important implications for theory and practice. This is the first study to look specifically at the negative effects of diversity from a dynamic perspective, enriching the extant literature with a new theoretical framework. We also provide guidelines for managers involved in the start-up creation process who must be aware of the role of team characteristics and, in particular, team diversity, considering the issues, dynamics, and characteristics regarding the different stages of startup development.

Keywords: *entrepreneurial team diversity, start-up failure, stages of development, post-mortem analysis*

Framing of the research. *The entrepreneurial teams, defined as “two or more individuals who have a significant financial interest and participate actively in the development of the enterprise,” have attracted the attention of scholars from different domains representing a vast and interesting area of investigation (Horvatinovic et al., 2023). In particular, the role of the entrepreneurial team in start-ups has received increasing attention in entrepreneurship, entrepreneurial behaviors, and strategic management literature (Sundermeier and Mahlert, 2022). This growing attention stems from the fact that most start-ups are launched by a team rather than a hero entrepreneur (Knight et al., 2020; Yang et al., 2022). It has been demonstrated that teams have more resources, knowledge, and skills than individuals to deal with the various challenges they face at different stages of a firm’s development that require complexity and flexibility in decision-making (Chowdhury, 2005; West, 2007). More recently, research has recognized the importance of entrepreneurial teams and their characteristics in shaping new venture performance (Zhou and Rosini, 2015; Sundermeier and Mahlert, 2022). Drawing on the resource-based view and upper-echelon perspective, these studies suggest that the quality of human resources in the management team is crucial in predicting firm performance (Hambrick and Masons, 1984; Barney, 1991). Thus, the entrepreneurial team possesses intrinsically valuable and difficult-to-replicate human capital that can serve as the basis for the competitive advantage of new ventures (Barney, 1991). Team diversity is one of the characteristics that has attracted the most interest among scholars. More specifically, diversity at the team level is defined as “the distribution of differences among the members of a unit concerning a common attribute” (Harrison and Klein, 2007, p. 1200).*

The literature has classified the diversity variables according to three broad categories (Zhou and Rosini, 2015): demographic diversity, including age, gender, and ethnicity; informational diversity, including education and experience; and personality diversity, including different personality traits such as motivation, passion, and vision. These characteristics were related to various performance indicators, including team-level measures such as team efficiency and effectiveness, team productivity, team creativity, and team decision-making (Kollmann et al., 2017; Hou et al., 2021; Zhang et al., 2022; Ma et al., 2022) and firm-level measures such as survival, growth, innovation, external funding, and financial performance (Debrulle et al., 2020; Wise et al., 2022; Box and Segerling, 2018; Biga-Diameidou et al., 2021; Zhou and Rosini, 2015)

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Traditionally, diversity has been considered a double-edged sword. If it is true that it brings new perspectives and ideas to the entrepreneurial team, it is also the root of intra-team divergent behaviors that harm performance (Das et al., 2021). Following the theoretical foundation of similarity-attraction (Byrne, 1971), social identity (Tajfel, 1978), and self-categorization perspective (Turner, 1978), people are attracted to and want to interact with others who share their opinions and values because they see them as validation of their own (Byrne, 1971). Within teams, individuals identify and differentiate themselves from each other (Tajfel, 1978). Such categorization occurs when different subgroup members are perceived unfavorably (Turner, 1978). Also, according to the conflict view (Amason et al., 2006), diversity will lead to conflicts and undesirable outcomes because of disparate opinions and attitudes. Consensus is difficult to reach since team members frequently divide into subgroups with inadequate interaction and numerous communication issues. According to these perspectives, individual team members can quickly categorize different team characteristics, negatively affecting performance.

Delving deeper into the existing literature, some studies have suggested that age, educational background, and experience diversity negatively affect sales growth (Amason et al., 2006). Bjørnåli and Aspelund (2012) suggested that age and industry background diversity negatively affect new ventures' international growth in building early alliances. Pinelli et al. (2020) found that the co-founder's educational background diversity, which is associated with a high level of education, hinders access to funding. Also, the diversity of experience in the founding team hinders the probability of accessing external funding (Blank and Carmeli, 2020). According to the study conducted by De Mol et al. (2020), diversity in terms of intensity separation, particularly in passion for developing the firm and passion for founding, negatively affects the obtainment of external funding. Lastly, experience diversity and educational level diversity were negatively related to financial performance in terms of ROA (Zhang et al., 2017). In addition to the paucity of studies analyzing the negative effects of team diversity on performance, these studies suffer from a static rather than a dynamic approach. None of the studies in this research stream demonstrated at which stage of start-up development specific team diversity attributes negatively affect start-up performance. As literature analyzing the dynamics of the entrepreneurial team composition suggests, teams are not static entities, but they evolve typically following the development stage of the firm (Patzelt et al., 2020; Yusubova et al., 2020). For example, a study on technology start-ups suggested that a team with solid technical expertise is more appropriate for the initial idea and product development stages. In contrast, in the later stages of commercialization and growth, team members with both technical and commercial experience are more in demand to sell the product in the market (Yusubova et al., 2020). The study by Tzabbar and Margolis (2017) also suggested that a specific entrepreneurial team composition depends on the firm's development stage. In particular, the authors showed that the positive effects of the human capital of the founding team in terms of educational heterogeneity and experience are stronger in the growth stage than in the early stage of a start-up. Another study suggested that heterogeneity of team industry and start-up experience is essential for start-ups to move from conception to creation (Munoz-Bullon et al., 2015). In sum, some entrepreneurial team characteristics, activities, and processes may be more or less critical during the different stages of firm development (Patzelt et al., 2020).

Purpose of the paper. Although the relationship between entrepreneurial team diversity and performance has been widely discussed in the literature, several questions remain unanswered. Firstly, little is known about the negative effects of diversity, particularly in terms of which variables harm performance. Existing studies provided more and stronger evidence for the positive impact of diversity than the negative ones. In addition, the relationship between diversity and performance has always been analyzed statically rather than dynamically, which means that studies fail to consider the different stages of venture development when analyzing negative effects.

Based on the above, our study aims to explore which team diversity characteristics lead to start-up failure, considering the different stages of development.

Methodology. Consistent with our aim, we employ a multiple case study following a post-mortem analysis (Yin, 1984). Post-mortem means analyzing the outcome retrospectively, which means "research in the past." Conducting post-mortem analysis is intricate due to its multifaceted nature, finding applications across diverse domains. For example, it can be used to analyze the project's final product, as Zhang and Iyer (2007) reported, or to help simulate the software process to improve software design estimation (Aguilar-Ruiz et al., 2001). Thus, this approach was typically used as an instrument of knowledge management in small and medium software projects (Schieg, 2007). In our work, post-mortem analysis is carried out to achieve an understanding of start-up projects that come to an end. Specifically, we followed a document-based post-mortem analysis method suggested by (Ahonen and Savolainen 2010). According to the authors, this type of analysis follows three steps:

- 1) **Data collection:** We collected online interviews with founders of failed start-ups from the Failory's database (<https://www.failory.com/startups>). The database regularly releases weekly articles, interviews, and narratives detailing both the successes and failures of startup founders, ensuring continuous updates. The database contains over 200 interviews, so the website allowed us to set up filters to speed up data collection. Firstly, we only considered interviewing entrepreneurs from failed start-ups, excluding successful ones. Secondly, we only considered failed team-based start-ups since we aim to investigate the problems and issues in an entrepreneurial team that were crucial in start-up failure. Once these filters had been applied, we read each reported interview to further refine it by excluding those whose failure was unrelated to the entrepreneurial team's characteristics. We ended up with a sample of 10 structured interviews with founders of failed start-up. The interviews are based on open-ended questions, which collect a range of information both related to the demographic characteristics of the founders and information related to the start-up history, such as the birth of the idea and how it was implemented, when things started to go wrong and what

were the main causes of failure. The interviews were supplemented by additional online material such as podcasts, posts, or other online news to get a complete view of the start-up story.

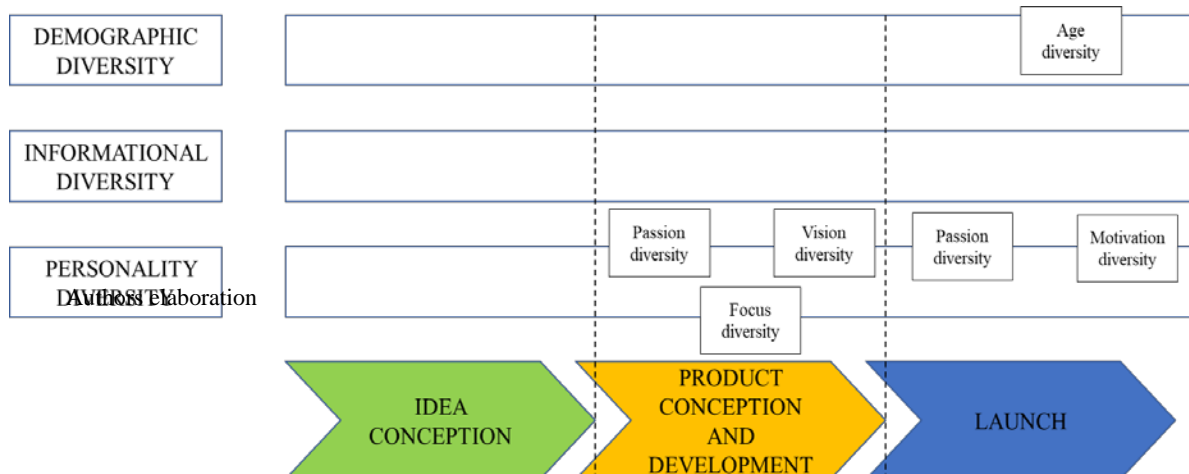
- 2) Data analysis: We analyzed the cases using the available documentation of each start-up in the following way. As we researched and obtained different information, it was possible to triangulate the analysis by cross-referencing it. The cases were constructed by anchoring the information to the various stages of the firm's development; thus, it was possible to capture the critical moments and issues regarding these phases. Reconstruction of start-ups' history helped us analyze the case in deeper detail, obtaining a great understanding of what went wrong
- 3) Presentation of results: In this last step, we reported the analysis result.

Results. The analysis of the negative effects of diversity showed that they need to be contextualized and considered in relation to the start-up's development stage. The negative effects of certain aspects of diversity vary from one stage to the next and are critical factors in determining failure. More specifically, they do not allow the company to move from one stage of development to another. Thus, by adopting a dynamic perspective, we have identified different stages of development: idea conception, product conception and development, and launch.

The first interesting aspect to emerge from our analysis is the nature of the diversity factors that have a negative impact. While the existing literature highlights demographic or informational factors such as age, education, and previous experience as critical factors, our study shows that the critical factors are purely cognitive or personality-related and, to a limited extent, demographic factors. Another interesting aspect, from a dynamic perspective, is that the negative effect of these variables only manifests itself in the product conception development and launch phases. Diversity does not seem to have a negative effect in the idea conception stage. Five start-ups failed in the product conception and development stage, and the diversity of passion, vision, and focus are the most critical factors in this phase. Team members often become detached from the business concept, resulting in a loss of enthusiasm for their work. Conceiving and developing a product necessitates ongoing collaboration among team members, occasionally involving trial and error that can lead to internal discord and divergent perspectives. At times, the workload becomes so demanding and exhaustive that the focus shifts toward irrelevant aspects, leading to delays and disarray. The other five start-ups failed in the launch phase, where diversity in age, passion, and motivation were the most critical factors. This stage is critical as the company interacts with the target market to secure its initial profits and expand gradually. Nonetheless, outcomes may not align with expectations; internal technical issues can result in the product failing to meet market demands. Financial losses and missed growth opportunities have left the team lacking motivation or enthusiasm.

For greater clarity, we have summarized the results of our study in a framework that highlights the negative impact of key diversity variables at different stages of development. In particular, following a combined approach, we match the concept derived from the literature regarding entrepreneurial team diversity and the different stages of development of start-ups identified. Thus, the framework combines two aspects: the main entrepreneurial team diversity attributes classified as demographic, informational, and personality (Zhou and Rosini, 2015), and the different stages of development classified as idea conception, product conception and development, and launch (Diakanastasi et al., 2018).

Fig. 1: Theoretical Framework



Research limitations. Our study has several limitations. First, our study analyzes failed start-up documents available online, providing relevant information up to the company's launch phase because we could not gather information about the subsequent development stages. Exploring this aspect in more detail is necessary to understand better which diversity factors may be critical in the later stages of development. Furthermore, it would be beneficial to include a control sample of successful start-up companies in the empirical analysis to determine whether a potential reason for failure has the opposite effect in a successful case study.

Managerial implications. *From a practical point of view, we offer suggestions to managers and founders involved in a start-up creation process, showing that what is important is not only the entrepreneurial propensity but also the intrinsic characteristics of the people involved in the start-up as co-founders. Managers should pay greater attention to cognitive and personality-related diversity aspects rather than only demographic or informational ones. Understanding the varied viewpoints, passions, visions, and focuses within the team is vital for navigating the different stages of startup growth. Managing diversity is a continual process that necessitates constant monitoring and adjustments. Managers must be aware of the changing dynamics within the team and modify management practices accordingly to mitigate the possible negative effects of diversity as the startup proceeds through different stages of development. The proposed framework could be used as a practical tool for decision-making regarding diversity management within the entrepreneurial team, which is useful in identifying potential areas of concern and tailoring interventions or strategies accordingly to optimize team performance and mitigate risks associated with diversity.*

The findings of this study could be helpful for incubators or accelerators that support start-up creation. They should implement courses or boot camps to manage diversity in an entrepreneurial setting, providing diversity training and awareness programs to help team members understand the value of diversity and develop the skills necessary to work effectively in diverse teams.

Originality of the paper. *While existing studies have focused more on the positive results, our study focuses on the negative impact by identifying which diversity variables were decisive in the failure of start-ups. Moreover, since existing studies have always analyzed the effects of entrepreneurial team diversity on performance from a static perspective, our study combines the analysis of negative effects in a dynamic perspective, identifying which diversity characteristics were crucial in the transition from one development phase to another, thus leading to the start-ups' failure. Additionally, the framework represents an original contribution to the literature because it combines two aspects: the main entrepreneurial team diversity attributes classified as demographic, informational, and personality, and the different stages of development classified as idea conception, product conception and development, and launch. These aspects have always been considered separately in existing studies that consider the potential negative effect of team diversity on venture growth.*

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<https://www.failory.com/startups>

Agility to Handle Dynamics of Business Transformation

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Abstract

This study analyzes the challenges and solutions of agile transformation using Group Concept Mapping methodology (GCM). We selected executives from large companies, scaleups, and external stakeholders to grasp different perspectives. The GCM identifies key challenges and solutions, emphasizing the importance of holistic understanding and agility during transformation journeys. Employee engagement, strategic changes, and iterative approaches are all critical to success. Cultural change requires tools and stakeholder engagement to be effective. Our contribution fills a gap in the agility literature by providing actionable insights for managers leading transformation efforts in dynamic markets.

Key words: agility, transformation, holistic, GCM, VUCA

Framing of the research. *Geopolitical changes, economic instability, technical advances and environmental disasters are some of the characteristics of a changing world. In response to this dynamic environment, the phenomena and need for change have become a hot topic, attracting the attention of businesses and academics.*

In recent years, practitioners and scholars have focused on various transformation concepts, such as agile, digital, and sustainable transformation (Strode et al., 2022; Grass, Backmann, & Hoegl, 2020; Warner & Wäger, 2019; Beretta & Smith, 2023). Furthermore, scholarly research stresses the need of organizational and strategic agility in attaining a competitive advantage and driving organizational performance, particularly in volatile, unpredictable, complex, and ambiguous (VUCA) situations (Troise et al., 2022). It highlights an organization's ability to manage chaotic and changing business landscapes, allowing for the capitalization of market opportunities and timely threat mitigation (Li et al., 2021). Despite evidence of agility's benefits, scientific work on agile transformation, particularly implementation elements, is lacking. Work on related issues, such as digital transformation, emphasizes the relevance and relationship to agile transformation (Beretta & Smith, 2023; Li et al., 2021), even referring to agility as "the engine of organizational transformation" (Beretta & Smith, 2023). Our perspective of agile transformation is holistic, encompassing both the design and implementation aspects of transformation. Such a comprehension includes more than just fundamental agile approaches; it also goes to the strategic level. It refers to the organization's capacity to reconfigure its strategy, culture, or structure in response to changing external and internal circumstances (Prange, 2021). Firms that adopt agile transformation may adjust quickly and take proactive actions (Girod, Birkinshaw, & Prange, 2023; Teece, Peteraf, & Leih, 2016). Thus, agile can enhance corporate performance (Handscomb et al., 2020; Salo, 2017) and competitiveness (Teece, Peteraf, & Leih, 2016). By researching agile transformation holistically, an in-depth analysis of external and internal variables is critical to identifying drivers, problems, and potential solutions as the change evolves. Existing research on agile transformation mostly departs from situations of "environmental turbulence" (e.g., Prange, 2021; Li et al., 2021), as previously indicated. This is not entirely unexpected given today's fast-paced and unpredictable world, in which firms must negotiate rapid technological breakthroughs, fluctuating consumer preferences, and environmental disasters. More precisely, external variables may not only initiate rapid change, but they may also provide ongoing obstacles that necessitate adjustments along the route. Unlike the description of the external environment, the analysis of internal agile transformation drivers shows tremendous nuance and interplay, making orchestration in design and execution crucial. Top management support is seen as crucial to success (Beretta & Smith, 2023; AlNuaimi et al., 2022; Grass, Backmann, & Hoegl, 2020). Transformational leadership is also highlighted (Bass & Riggio, 2006), which complements employee empowerment (Grass, Backmann, & Hoegl, 2020; Strode et al., 2022). Transformational leadership is distinguished by the ability to build relationships with subordinates while also educating and motivating (Ramadan et al., 2023). Co-strategizing procedures and the quality of internal conversation thereby connect the aspects of agile transformation design and implementation. Although "openness" to external stakeholders might provide the same benefits, Morton (2023) cautions that their engagement may add problems such as information leakage, misunderstanding, duties confusion, and information overload. The mentality and culture of an open-learning business,

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with its dedication to continuous improvement, promotes the development of an agile workforce (Strode et al., 2022), which is another essential factor in strengthening a company's flexibility and readiness for change (Conboy & Carroll, 2019).

Technology and technology (i.e., digital) skills are cited as enablers of agile transformation (Troise et al., 2022; AlNuaimi et al., 2022). The role of technology is defined as the ease of delivering and sharing relevant information for decision-making across internal and external stakeholders, functions, and processes (Li et al., 2021). Finally, agile transformation presents a strategic problem with conflicts that businesses and leaders must address. These tensions are related to the balance between existing and new ways of strategizing, organizing, and learning (Smith & Lewis, 2011), the exploitation of existing capabilities versus the need to build new ones, the oscillation between maintaining today's business and transforming into tomorrow's business, or deciding between the need for speed and an incremental and slower transformation process. Proactively detecting, analyzing, and managing conflicts and problems will aid in achieving a successful transition trajectory.

Purpose of the paper. The external environment is increasingly dynamic and uncertain, unexpected and disruptive events require the ability of companies to react promptly to change. Indeed, transformation is now a watchword for most organizations to survive both exogenous and endogenous changes (Uhl & Gollenie, 2016). Organizational agility assumes a key role in such a volatile and uncertain environment (Troise et al., 2022), and it is deemed to be a driver of the transformation process (Beretta & Smith, 2023). Scholarly work emphasizes the role of agility as a driver of transformation and the need for a comprehensive study of agile implementation (Beretta & Smith, 2023). Despite its strategic importance, the implementation of agile transformation remains a considerable challenge (Annosi, Foss & Martini, 2020). Given the scarcity of existing work, our study seeks to fill the gap in understanding the implementation side of agile transformation by investigating and answering the research question:

What are the conceptualizations and perceptions of the challenges encountered in agile transformation trajectories and what solutions can be envisioned to address them?

Methodology. To effectively address our research aim, we employed a mixed method called Group Concept Mapping (GCM), which is beneficial for estimating conceptual representations and testing perceptions of those representations (Rosas, 2017; Trochim, 2017). To estimate participant groups' conceptualizations of a specific object, system, or topic, it employs both multivariate statistical techniques (e.g., agglomerative hierarchical cluster analysis, or AHCA) and qualitative techniques (e.g., brainstorming sessions and group interviews). It is frequently utilized in planning and evaluating social programs, health programs and concerns, education, entrepreneurship, and quality process improvement, among other areas. Inductive work may be done to comprehend polysemous situations using GCM in exploratory work (Cloutier et al., 2019). Executives from scaleups, major, established businesses, and players from the larger ecosystem made up participants, who were carefully chosen. Scaleups evolve to stay agile, whereas large, established organizations start the process of transformation to become agile. Lastly, the stakeholder viewpoint makes it possible to get objective data. As this study indicates, the GCM includes research phases that are connected to certain particular activities. Idea generation and discussion on a focus request are part of phase 1. Phase 1 involves group discussions and phase 2 is researcher-centered and involves coding content and developing items representative of their experience. Phase 3 involves structuring and evaluating the items by participants who participated in phase 1 and other participants new to the research who had experience with agile transformation. Phase 4 involves using multivariate statistical methods to analyze the results, and Phase 5 involves answering the research questions and assessing the results for external validity. This phase is based on the experience of the participants.

Results. The results are composed of two main parts. First, the concept map which is a conceptual representation of the main transformation challenges and solutions that emerged through the six focus groups. Second, the pattern matches illustrate the rank ordering of the perception of each cluster's importance and feasibility.

The Group Concept Map (Figure 1) clearly shows that participants have placed Strategic Enablers at the center of the concept map. This cluster includes 5 items, for example, 'To make room and space for continuous improvement' (Item 88), and 'To clearly define actions and objectives to be achieved by sharing decision power and responsibility' (Item 69). The central cluster serves as a systemic "attractor", influencing dynamic interactions among all other clusters on the map (Trochim & Cabrera, 2005). It shares boundaries with surrounding clusters, denoting common characteristics. The overarching interpretation posits that it absorbs tensions arising from dynamic interactions among all clusters depicted on the concept map. For instance, Item 69 - 'To clearly define actions and objectives to be achieved by sharing decision power and responsibility' (Strategic Enablers cluster) may be seen to interact with Item 25 'To understand what the people in leading positions need to know and what to delegate' (Preparing Human Capital, Readiness and Trust cluster) and Item 84 'To support and let individuals and teams figure out solutions' (Team Integration, Cohesion, and Reach cluster). Thus, from a strategic point of view, the central cluster influences the other clusters.

Figure 1. The Group Concept Map



The cluster named *Strategic Enablers* contains five items. As anticipated, it is located at the center of the map, and it is the most strategic one. It encompasses a series of ‘intangible’ items that lay the strategic foundations for a proper transformative process (e.g., Item 69 - ‘To clearly define actions and objectives to be achieved by sharing decision power and responsibility’). This cluster can be considered as representative of dimensions that unpack overall transformation goals and facilitate or catalyze solutions for action identified in the other clusters on the map.

Action Enabling Tools and Processes is a nine-item cluster. Its items focus on actions needed to carry out an organizational transformation process. Consequently, attention is directed towards indispensable tools and processes pivotal in facilitating transformation, such as, ‘To (re)allocate resource (e.g., capital, human, financial, etc.)’ (Item 1); ‘To do an organizational maturity level assessment, (whether informally or formally)’ the attention to rules and careful planning of the transformation (e.g., Item 8 - ‘To have micro-planning in fast transformation’), and the role of supporting tools, such as ‘flexible systems (e.g., IT systems), as the backbone of transformation’ (Item 2).

The cluster on *International and Local Stakeholder Engagement* has ten items. This cluster expresses a bilateral way of engaging with the external environment, both in terms of the international context and external stakeholders’ engagement more broadly. This cluster emphasizes the importance of the international context to sense opportunities or assess the current strategy (e.g., Item 10 - ‘To be exposed in an international context helps to understand whether the company direction is the right one’), and the role of external stakeholders. In line with a networked view of the firm, external stakeholder involvement is critical for both the assessment of the company’s efforts but also for its alignment with the business environment (e.g., Item 49 - ‘To collect feedback and align with external stakeholders to change’).

The cluster *Team Integration, Cohesion and Reach* contains thirteen items. It relates to the relevance of training and support offered to teams and its evolution in a transformation process (e.g., Item 6 - ‘To have training for team integration and teamwork’), but also the adoption of cross-functional teams and people rotation (e.g., Item 85 - ‘To create the conditions for working together across departments’). Along with efforts to increase transformation understanding, skills, and competencies internally goes the recognition that new people must share the company’s transformation attitude and new culture, willing to continuously improve and change (e.g., Item 59 - ‘To hire new people aligned with the right transformation attitude’).

Preparing Human Capital, Readiness and Trust is a fifteen-item cluster that captures another aspect of human capital. While the cluster *Team Integration, Cohesion and Reach* foster the holistic view of a company, here the emphasis is on employees and their role as autonomous actors. Participants convey the relevance of involving employees in a transformation process (e.g., Item 28 - ‘To start transformation first with people, i.e. ‘companies are of people’) and the need to raise ‘Awareness of today’s different ways of working’ (Item 15). Furthermore, to be ready for change and take on responsibility for the change to happen, employees need ‘to feel part of the transformation i.e., feel part of the solution’ (Item 36). The role of hierarchy - responsibility and delegation (e.g. Item 25 - ‘To understand what the people in leading position need to know and what to delegate’ - is a key topic. Employees need to be motivated to ‘explore new things in their work in line with a changing culture’ (Item 38) implying at the same time a new role of management and a different way to exercise leadership. The challenge of persuading middle management to embrace change emerges as a prominent obstacle during transformative phases (e.g., Item - 47 ‘To support middle management in understanding how its role, attitude, and behavior ought to change’). Consequently, a pivotal aspect of managing organizational transformation lies in providing robust support to middle management, facilitating their comprehension of forthcoming changes in roles and responsibilities (Girod, Birkinshaw, & Prange, 2023).

The cluster Culture Transformation and Outgrowth contains eleven items. Participants widely concur that organizational transformation necessitates a profound cultural shift. First, individuals must comprehend the rationale behind the change, the intended direction, and share its objective (e.g., Item 39 - 'To create a shared understanding within the company of why change is necessary e.g., benefits of change, resistance to change avoidance, feel the need to change, etc.'). Second, it is imperative to foster a change-prone culture at all levels that facilitates, supports, and aligns people with the change process. This involves the acceptance of potential errors as the workforce adapts to radically different operational modes and adheres to solutions proposed across various hierarchical levels (e.g., Item 77 - 'To perceive agile transformation as a radical change of mindset, more flexible and open'). It is crucial to recognize that cultural change extends beyond individual transformation; it must be accompanied by a radical shift in work methodologies, internal organizational structures, and organizational processes (Item 71 - 'To be ready to change the company's structure while transforming'; Item 62 - 'To be ready to change soft and hard factors e.g., culture, structure, processes').

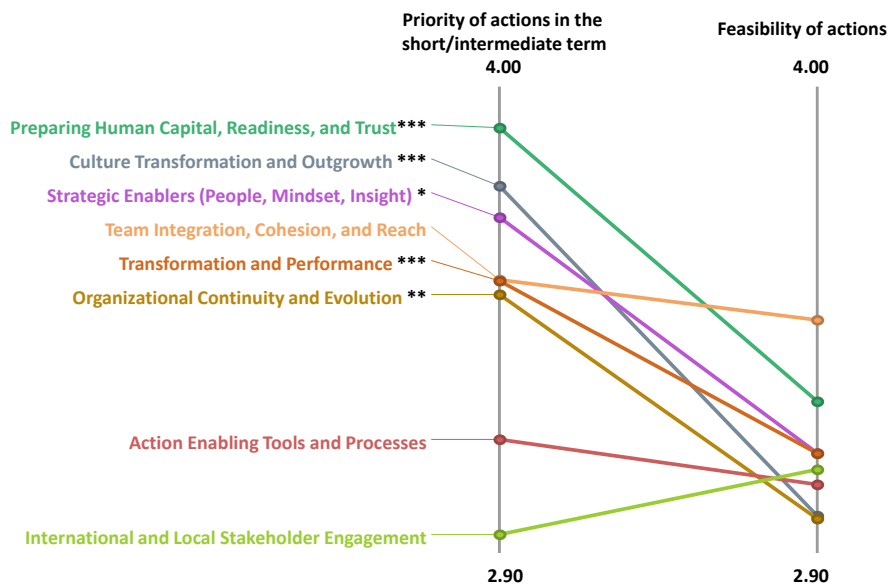
Organizational Continuity and Evolution is an eleven-item cluster. This cluster underscores the dynamic and evolving nature of the transformation journey, emphasizing the importance of adaptability and continual refinement in organizational practices. There is widespread consensus that a change process involves finding a balance among the actions to be implemented. This encompasses understanding how much emphasis to place on 'business as usual' as compared to the ongoing change and strategizing process (e.g. Item 44 - 'To find a balance between doing business and transforming at the same time'). The adoption of agile principles into organizational culture emerges as a powerful catalyst for driving collective efforts toward successful adaptation (Item 55 - 'To mobilize agile principles for culture change'). Furthermore, overcoming information bottlenecks in the minds of founders and managers is essential to unlocking innovation and streamlining decision-making processes (Item 68 - 'To break the information bottleneck that resides in the minds of founders and managers'). At the same time, preserving the benefits of smallness, such as information sharing and agile decision-making, remains critical during transformation efforts (Item 74 - 'To keep the advantage of smallness'). Moreover, individuals must recognize that an incremental and continuous transformation process is needed 'to facilitate the acceptance of change' (Item 52), so that the organization as a whole 'constantly learn while transforming/improving processes' (Item 73).

Transformation and Performance is a cluster composed of sixteen items that underscore the imperative to identify suitable performance metrics and create a common understanding (e.g. Item 24 - 'To develop an understanding of the relevant KPIs'). In turn, such standard processes are conducive to performance as they link back to goals and planning and, at the same time, enable corrective action. The transformation itself needs to be (re)active and responsive to changes but also the notion of performance as evidenced in Item 63 - 'To be reactive to changes in the environment, customer request, and regulation' - emphasizes a key goal and outcomes of agile transformation. Items in this cluster also evidence the need for a holistic view of transformation to achieve performance (e.g. Item 42 - 'To focus on several interrelated problems rather than on one problem at the time').

The pattern matches graph (Figure 2) shows estimates of the perceived priority and feasibility scales of the agile transformation clusters identified on the concept map. Pattern matches help identify how clusters are rated relative to the two scales examined (Likert-type five-point scales). Overall, the nonparametric Wilcoxon signed-rank test for matched data shows a statistical difference among participants between the priority and feasibility scales (p -value < 0.05).

Figure 2. Pattern Matches of the relative priority and feasibility of agile transformation actions†

† Ratings based on five-point Likert-type scales; Nonparametric Wilcoxon rank-order test for matched data pairs p -value < 0.05 between priority and feasibility scale ratings; *** p -value < 0.001; ** p -value < 0.002; * p -value < 0.05.



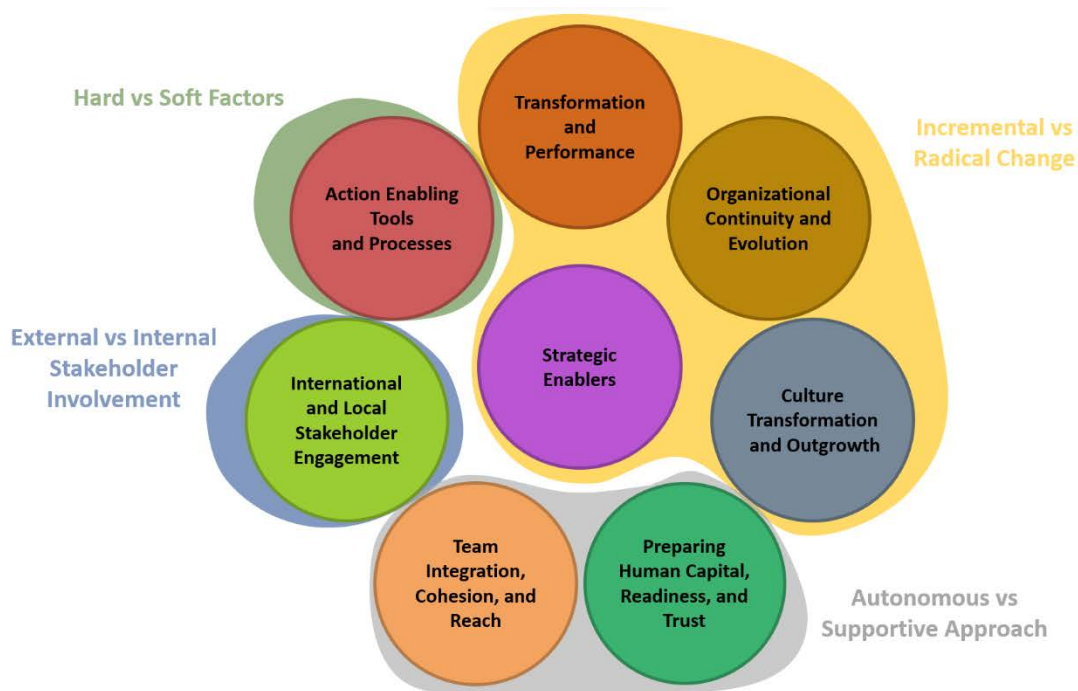
The results indicate that in agile transformation, participants have prioritized item sets pertaining to the clusters Preparing Human Capital, Readiness and Trust (rank 1); Culture Transformation and Outgrowth (rank 2); and Strategic Enablers (People, Mindset, Insight) (rank 3). It is interesting to note that participants perceive a high priority regarding cultural-related aspects yet the feasibility of such a softer dimension is not perceived as readily quickly achievable. As seen, the cluster ranked as a top priority, Preparing Human Capital, Readiness and Trust, ranks second in matters of feasibility. Looking for additional outcomes, the cluster Culture Transformation and Outgrowth ranks 7th which is much lower. Culture is typically slower to change (Grass, Backmann & Hoegl, 2020; Tronvoll et al. 2020), and thus, the lower feasibility of this dimension may not constitute an outright surprising result. This ranking relates perhaps to the fact that human capital internal training and support might need additional impetus that could be brought from external resources, whether through hires, stakeholder engagement, or additional structural-systemic alignment to reinforce a culture change.

However, Transformation and Performance is ranked 4th regarding its feasibility and is statistically different; and Organizational Continuity and Evolution is ranked 8th, that is last, for feasibility. The imbalance between the priority and feasibility for the latter cluster is perhaps associated with the tendency to prioritize major changes, despite feasibility hurdles that may arise from a shared understanding in the organization of the need to undertake major transformations. The priority and feasibility difference could arise from the belief that certain changes could have more significant and crucial impacts over time. Yet, when it comes to implementation, the readiness for concrete actions may not match their perceived immediate priority.

Surprisingly, Action Enabling Tools and Processes rank 7 and International and Local Stakeholder Engagement rank 8. External resources and know-how can support agility and change initiatives (Morton, 2023; Li et al., 2021), yet participants may undervalue stakeholders' contributions and the role of tools in easing implementation.

In today's business landscape, organizations must constantly evolve to remain competitive. Both external pressures and internal factors like company growth and shifting roles drive this transformation, highlighting its complex nature. To facilitate discussion, we have employed latent constructs to group the clusters into different regions of meaning (RM) for concept map interpretation (Kane & Trochim, 2007).

Figure 3. Concept map and regions of meaning (RM)



The RM Hard vs Soft Factors includes the cluster Action Enabling Tools and Processes. This region evidences tensions and the need for synergy for considering and measuring both hard and soft factors for an effective organizational transformation. Key performance indicators and their respective tools provide insights into an organization's transformation trajectory and outcome. However, organizations show a tendency to measure and emphasize primarily tangible and easily quantifiable results (Zairi, 2012).

Identifying appropriate proxies, continuous tracking, and incorporating these intangible aspects into the assessment is imperative (e.g., Item 46 - 'To customize tools and frameworks with the challenges to be addressed'). In addition to the ability to identify the 'what' and the 'how' to measure, it is also crucial to know the 'when' to measure during the

transformation process. This necessitates a balanced assessment encompassing both hard and soft factor metrics, that may challenge conventional ones. Thus, organizations are urged to look beyond 'surface-level' measures.

The *RM Autonomous vs Supportive Approach*, unites two clusters, emphasizing the pivotal role of individuals during the transformation process. As mentioned above, human capital and their involvement are considered essential and highly prioritized (e.g., Item 36 - 'To make people feel part of the transformation i.e., feel part of the solution').

Employee empowerment would necessitate a shift towards taking on responsibility and action at all hierarchical levels and ensure that people are prepared and able to accept such a shift (e.g., Item 66 - 'To motivate individuals and teams to take responsibility for change every step of the way'). Similarly, managerial levels need to comprehend the shift towards a supportive rather than authority-oriented approach (e.g., Item 47 - 'To support middle management in understanding how its role, attitude, and behaviour ought to change') - that transformational leadership is needed, and which structures and decision-making processes are requisite. Striking a balance involves defining explicit rules and roles while empowering teams to function autonomously through effective delegation (Grass, Backmann & Hoegl, 2020).

The *External vs Internal Stakeholder Involvement RM* includes one cluster. Examining the cluster in more detail, items describe two macro topics referring to stakeholders' involvement and international presence. The company's international presence items (e.g., Item 10 - 'To be exposed in an international context helps to understand whether the company direction is the right one'), claims that international exposure can be crucial for designing, assessing or potentially pivoting transformation efforts. Also, the literature emphasizes international exposure as a benefit to capture emerging trends and gain competitive advantage (Hagen et al., 2012). However, this cluster is not considered a priority for our participants. This could be because companies are already international and do not plan to further reinforce international activities in the short term. Yet, it would not be advisable to conclude that the international aspect is not relevant in the transformation context.

Furthermore, we can see that participants 'underestimate' the role of stakeholder engagement, both local and international, in the success of transformation. Although internal efforts are key, stakeholder engagement beyond company boundaries is needed to become and stay agile (Hagen et al., 2019). An explanation here may lie in the fact that stakeholder involvement may not occur in the early stages of a transformation. Extant literature on transformation claims that engaging stakeholders is a key pillar in the transformation (Morton, 2023; Li et al., 2021). However, this collective viewpoint among participants appears to challenge conventional expectations. While the transformation process inherently focuses on internal facets of the company, initiating and hoping to conclude a transformation without engaging external stakeholders can be considered unrealistic.

The *Incremental vs Radical Change RM* encompasses four clusters, namely *Transformation and Performance*, *Organizational Continuity and Evolution*, *Strategic Enablers*, and *Cultural Transformation and Outgrowth*. These clusters collectively pertain to the formulation of a transformative strategy within an organization. While recognizing the key role of individuals, teams and culture in the transformation, the need of changes to structure and operation models must be underscored when it comes to execution.

Research limitations. The limitations of this study are mainly the small sample size and the limitation to the generalization of the results. Although the number of participants in the focus group phase was more than sufficient to generate a good representation of the conceptual domain, a larger number of experts involved in the sorting and rating phase would have been preferable, as this allows for subgroup research. Indeed, the objective of the study is to provide an aggregated overview on the topic of agile transformation by considering the experiences and perspectives of all actors potentially involved in this transformation process.

At the same time, however, our choice and the number of participants in the sorting and rating phase do not allow us to further break down our results to have an intra-group view as well. The threshold for the size of the sorting and rating groups is between 20 and 25 to obtain valid results (Trochim, 1989). For this reason, in the future, it might be useful to collect more data to be able to observe not only the aggregate information but also to be able to compare the results between the different participants' sub-groups.

Managerial implications. This article addresses the implementation phase of agile transformation to broaden our comprehension of organizational and strategic agility. It makes a significant contribution to the existing body of knowledge on this topic by situating organizational renewal in today's dynamic business environment. In addition, the research has practical implications for managers in that it provides a solid foundation for the effective management of organizational change. It equips managers with the skills needed to lead and manage their organizations through important periods of change and adaptation, providing useful guidance and effective procedures.

Originality of the paper. This study aims to fill the gap in understanding the implementation side of agile transformation by illustrating the conceptualizations and perceptions of the challenges encountered in agile transformation trajectories and what solutions can be imagined to address them. In addition, the application of a mixed methodology, such as GCM, made it possible to estimate conceptual representations and measure perceptions about those representations. Indeed, it uses qualitative methods (e.g., brainstorming sessions and group interviews) and multivariate statistical methods to estimate the conceptualizations of groups of participants on a particular topic.

Participants (executives from large and established enterprises, scaleups, and stakeholders from the broader ecosystem) were purposively selected. In fact, large and established enterprises initiate the transformation process to become agile, while scaleups transform to remain agile. Finally, the stakeholder perspective allows unbiased information to be gathered.

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Venture-Builders' Program Design and the creation of Scaleups

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Abstract

The Venture-Building model has increasingly gained popularity in recent years across Europe as a promising model of innovation and entrepreneurship that can help mitigate the risks of startup creation and maximize the chances of success. In contrast with traditional business acceleration programs that support existing startups - who already have a founding team and a somewhat developed idea - with resources and networks, Venture-Builders are concerned with creating or building new startups starting only from an idea. They typically aim to create scalable companies or scaleups from the outset, drawing on the expertise of entrepreneurs-in-residence who have previous entrepreneurial successes under their belt.

As Venture-Builders have gained in popularity and success, a host of different actors, such as venture capitalists and business angels, universities, private companies and public sector institutions, have started to develop and implement their own Venture-Builders. These differ in various aspects, such as the infrastructure they make available to the startups, the degree of control they exercise, the extent to which they focus on specific sectors or technologies, where they seek ideas, how many ventures they build at the same time, and their relationship to funding sources. These aspects are, however, also connected with the ability of firms to scale and grow. Different Venture-Building models may thus be more, or less, suited to fulfilling the promise of creating scaleup companies, that exhibit sustainable growth, consistently over time.

Therefore, the paper attempts to shed light on the previously unexplored link between the features of the Venture Building process and the creation of scaleup companies.

Through a series of interviews conducted on Venture-Builders across Europe, set up by different types of actors, we create different archetypes of Venture-Builders and discuss their suitability to producing scaleups.

Key words: *Venture-building model; Startup Studio model; Venture-building process; Entrepreneurship; Scaleup*

Framing of the research. *The Venture-Building model has increasingly gained popularity in recent years across Europe and beyond. In contrast with traditional business acceleration programs, that support existing startups - that already have a founding team and an idea - with resources and networks, Venture-Builders are concerned with creating new startups from scratch, starting only from an idea (Kohler and Baumann, 2015; Pauwels et al., 2016). They often use a Factory metaphor to symbolize the churning out of startups - that they have "built" - consistently over time. The business ideas that are transformed into startups are either developed internally or sourced from external ideators. Startup execution is guided by a team of Entrepreneurs-in-Residence selected by the Venture-Builder that typically have had previous entrepreneurial or domain experience (i.e. marketing, sales, business design, talent acquisition, etc.) (Lesage, 2022). The startup stage follows rigorously outlined processes, where the Venture-Building team supervises and actively engages within the start-ups through thorough idea and solution validation steps to mitigate potential failures and de-risk the startup process (Sgambati, 2022). In addition, the newly minted startup teams are provided with resources and networking opportunities. In this way, Venture-Builders boast that they can create companies that will move more quickly from the startup to the scaleup phase.*

Venture-builders cultivate large talent pools that they can draw on to build capable teams for each startup idea. Building several ideas at a time in a repeatable fashion improves resource allocation for talent and capital, which can be redistributed between different startups as the projects advance and either fail, pivot, or continue. In addition to the team, which is an essential resource for any startup success, Venture-Builders also provide financial resources, attracting them both through their network and through their reputation in the funding (and founding) landscape. Finally, repeatable processes, that typically follow a lean startup methodology or a stage-gate process with multiple reviews, help to keep the startups on track towards achieving product-market fit (Kohler and Baumann, 2015).

Venture-builders are thus a promising model of innovation and entrepreneurship that can help mitigate the risks of startup creation and maximize the chances of success (Sgambati, 2022). Thanks to the success rates of this model, coupled with an increasing attention on entrepreneurship as a driver of economic growth, in the past years the creation of new

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Venture Builders has risen rapidly, with 560 active venture-builders globally in 2021, expected to double to 1200 by 2023 (Alhokail et al., 2023, 2019). By 2019 Europe caught up with the USA in terms of the number of Venture Builders, and these had collectively raised as much Venture Capital as was available to traditional start-ups exiting accelerators (Alhokail et al., 2019).

This proliferation of Venture-Builders has created a large heterogeneity in the actors who are engaging in venture-building, which encompass venture capitalists, business angels, private companies, universities, and government institutions. In addition, the different Venture-Builders encompass a variety of design features that differ according to the vision of their founders. This has created a proliferation of models and terms, such as Startup Studio, Startup Factory, Company Builder, Venture Studio, Startup Foundry, and Startup Nursery (Lawrence et al., 2019). These different models may have an impact on the growth rates and the ambitions of start-ups that are born through the venture-Building model, thus impacting the number of scaleups that can emerge and thrive in the market.

Scaleups are defined as companies that achieve both high growth and wealth creation, and who thereby create a virtuous cycle where the wealth that is created can be used to fuel further growth. This happens thanks to a scalable business model, where scalability implies that the value proposition can be replicated such that revenues increase faster than costs (Monteiro, 2019). The transition from a startup to a scaleup is typically visible when the startup starts to harvest its first few clients, known as gaining market traction. At this stage, the more loosely structured startups need to acquire a more formal structuring that can support rapid growth (Picken, 2017).

Venture-Builders' Design

Examining Venture-Building models, Alhokail et al., (2019) identified six dimensions which can be used to describe different archetypes that have emerged over the years. These six dimensions are named: *The Guild*, *The Control*, *The Idea*, *The Funding*, *The Volume*, and *The Focus*.

The Guild: The Guild is the infrastructure package that Venture-Builders supply to their startup companies. It includes the *Entrepreneurs-in-residence*, *technological know-how*, *finance*, and *physical spaces*. The Guild may be shared horizontally between different startups in the portfolio to increase cost-effectiveness, or it can be distributed vertically for each business.

The Control: Venture-Builders have different rules governing the equity they hold in startups, according to their coaching intensity and required degree of control. Venture Builders who own significant amounts of equity, also have a higher control over their startups' decisions and may coach the startup for longer periods even beyond graduation from the Venture-Builder program itself. According to Alhokail et al., (2019), founders' equity stakes could range from 1% to 90%, which creates some very different conditions for the start-ups themselves.

The Focus: Venture-Builders can choose to operate across different sectors, covering a wide spectrum of technologies and markets, or they may operate vertically in a specific sector or on a specific technological solution (e.g. Artificial Intelligence or Deep Tech). The first approach is called the "Generalist" while the second is called "Specialist" (Alhokail et al., 2019). The first approach creates a critical mass of diversified investments that can mitigate overall risk, while the second approach benefits from a strong specialization of resources and know-how that leads to synergies that can be exploited by all startups in the program.

The Idea: Idea generation is a critical component of the Business Model of Startup Studios. Sourcing might be done externally or internally. External sourcing may take two forms: fostering external early-stage firms or scanning the market for the best venture to produce a Copycat (Sgambati, 2022). Internal idea sourcing, on the other hand, is a procedure that involves the commitment of Startup Studio specialized employees to generate new ideas.

The Volume: Startup studios can develop a few or many businesses concurrently. This is likely the most challenging choice to make when designing a Venture-Builder's Business Model. On the one hand, undertaking a small number of ventures, lessens the benefits and the synergies of the studio model, while on the other hand, overseeing too many initiatives concurrently degrades both the quality and number of human resources available to the guild for individual ventures. As a result, being able to balance resources and the number of ventures is a Key Success Factor for startup studios.

Funding: Startup studios can choose to finance their portfolio with their own resources or can choose external funding. Hybrid solutions are common, with external partners piggybacking onto the funding that the Venture-Builder makes available for the start-ups.

These dimensions are also very much related to startup growth once it reaches the market and may result in very different success rates in creating companies that rapidly advance towards the scaleup stage. This paper thus maps the different models of Venture-Builders in Europe and relates their model to the effective capability of building scaleup companies.

Purpose of the paper. Literature has emphasized how, from the outset, Venture-Builders aim to create startups with scalable business models. Indeed, Venture-Builders themselves also broadcast the objective of creating scale-ups rather than traditional start-ups. A comparison of the top 21 companies to emerge from Venture-Builders with the top 21 companies that graduated from acceleration programs revealed that companies from accelerators raise 105% more money, but companies from Venture-Builders have a 26% higher growth (Szigeti, 2016). This would imply that Venture-Builders are indeed more adapted to creating scale-ups. However, an analysis on outliers cannot be considered representative of the overall success rate of Venture-Building, which, similarly to startup creation, follows a power-law distribution with a very long tail of unsuccessful cases and a few very successful ones (Clauzet et al., 2009). We contend that there are design features of Venture-Builders that are more or less effective in producing scaleup companies and attempt to investigate this further.

Methodology. *The research is based on multiple case studies through desk research of 32 Venture-Builders in Germany, The Netherlands, The UK and Spain, and interviews conducted between 2023 and 2024 of 6 venture-builders in Italy and Greece, where we used the owners and managers of the venture-building programs as key informants. The desk research and interviews enabled us to explore the different components of the actors' Venture-Building model following Szigeti (2016). From the individual cases, we derived different archetypical models of venture-builders. Considering differing contexts, the case conclusions develop propositions that express which of these models are more suited to producing scaleups rather than startups, presenting some case studies to illustrate the theory.*

Results

Venture-Building Models

The following descriptions were derived from the interviews and the desk research, and they concern different venture-building models according to the different types of actors that created the Venture-Builders. The Venture-Builders used to create these models are spread across Europe, both in highly innovative and low innovating regions. They typically concern high-tech industries and digital technologies (Daunfeldt et al., 2016), although there are also some generalists that have no particular focus.

Universities

Guild: Universities tend to compose teams from internal affiliates only (students, researchers, faculty, alumni), without providing external or expert CEOs and other key staff.

Control: Universities typically hold no control over the startups they create through venture-building

Idea: Idea generation is generally internal and is deputized to the students

Funding: Universities typically provide no funding for the startups, beyond some small awards (sometimes from external partners).

Volume: Universities tend to produce many businesses concurrently, to accommodate all the students with an entrepreneurial vocation. Out of all the groups built, there is an award at the end for a handful of the best ideas and executions.

Focus: Universities tend to be generalists in their focus, in line with their vocation as multidisciplinary institutions, but mirroring the disciplinary areas where their research efforts are present or strong.

Additional information: Universities often create these programs as part of their third mission. The key metrics they mentioned were the number of startups created, the number of students participating in the program, and the market cap of all the startups created over time.

Institutions

Guild: Institutions rely on external participants to form teams, without providing key staff

Control: Institutions typically hold no control over the startups they support

Idea: Idea generation is typically external and is entirely up to the startups

Funding: Institutions may provide funding, but it's generally limited to seed capital or capital to sustain the acceleration phase.

Volume: Institutions tend to produce several businesses concurrently

Focus: Institutions tend to be generalist, while focusing on broad issues for the municipality or region where they are embedded (e.g. smart cities, transportation, tourism)

Additional information: Institutions reported wanting to accelerate local innovation and inject new technologies into the current ecosystem as their main motivation for creating a venture-builder. They rely on partnerships with key actors from the local ecosystem to create the entrepreneurial ecosystem.

Corporations

Guild: Corporations tend to provide all the staff internally from their company

Control: Corporations tend to maintain at least partial control over the startups they create through venture-building

Idea: Ideas are created internally by employees and managers

Funding: Corporations typically provide seed funding for the startups and further funding for a subset.

Volume: Corporations typically focus on small to medium volumes

Focus: Corporations tend to have a more specialized outlook with a focus on their key markets and technological areas

Additional information: Corporations are looking to capitalize on internal under-used knowledge to open up new markets and new revenue streams. They often rely on external partners for the Venture-building program at least at the

outset, because specialized knowledge is necessary to create a successful venture-builder. They fund the venture-building programs themselves.

Venture-Capitalists and Angel Investors (VCs)

Guild: VCs often provide the CEO and other key personnel in the venture. They typically look for professionals or researchers with technical expertise who need the complementary management expertise. They either personally participate in the ventures or look for capable managers within their personal network.

Control: VCs take a percentage of control of the final idea, to sustain their business model.

Idea: Ideas are typically scouted from the external landscape, both the professional world and the research and university sector.

Funding: VCs may provide their own funding to start-ups and seek to attract external funding from other VCs. In this case, credibility of the venture-building staff is critical to attract and retain funding sources. Credibility implies having already created successful businesses in the sectors they focus on.

Volume: VCs typically go for very low volumes, as the venture-building staff is personally invested in each venture and is part of the founding team.

Focus: VCs are often sector-specific and pursue a sectoral or even more narrow focus, where they are the most knowledgeable and credible.

Additional information: VCs and Angel Investors treat venture-building as a business, in which they obtain returns by providing all the building blocks to sustain great ideas. Their credibility is thus on the line with each new startup. They use their own funding, however, may also resort to external investors such as other VCs, banks, and private companies.

Venture-Building Models and Scaleups

Literature has examined several conditions that are important in the creation of scaleups. First, when companies reach the scaleup phase, they have a significant increase in the resources they need to fuel their growth. These resources must come from the broader entrepreneurial ecosystem in which the company is embedded, to which they typically get access through the Venture-Builder itself and the networks in which it is embedded (Mohr et al., 2014). In addition, the Board of directors and the managers of such a scaleup also play a role in this search for resources, through their personal networks but also increase the ability of scaleups to capitalize on the resources they receive (Zahra et al., 2009). Scaleups also often need human resources, that must be hired and trained. In this context, both the networks of the startups but also the mentorship and guidance from top management can be of great importance in this process. This is even more important in the event that the startups are in high-tech sectors and need advanced expertise for their further development, which seems to be often the case (Daunfeldt et al., 2016).

From this point of view, the different Venture-Building models have distinct advantages. On one hand, the more specialized models such as those of VCs/Angels and Corporations have in-depth domain knowledge and networks of human resources they can tap into, as well as providing specialized founders and managers through the guild. In addition, they can usually mobilize more capital. Universities can mobilize specialized human resources but have less to offer in terms of entrepreneurial experience and access to funding. Public institutions rely on external actors to mobilize all necessary resources, and thus seem to be in a weaker position to provide these essential assets.

Literature also focuses on the amount of control that the scaleup founders have over the company. In particular, control is expressed as a currency that may be exchanged for external resources including funding (Wasserman, 2017). Thus, the more the scaleups are dependent on external resources, the more they will have to relinquish control over their firm in exchange for these. Venture-Builders who retain a large amount of control over their startups, such as the VC/Angel models and the corporate models, may in future hamper the businesses' ability to acquire precious resources at the scaleup phase. The university and public institution model, by hardly taking any control, may leave more flexibility to the startups in this sense.

Finally, the power-law distribution would imply that creating scaleups is also a numbers game. Therefore, those Venture-builders who create many tens of startups at the same time, i.e. typically those of universities, have higher probabilities of producing scalable businesses that ultimately see above-average returns.

Research limitations. The paper is based on an analysis of venture-builders in Europe. This is original w.r.t previous literature which has focused more on the US market, however European conditions for entrepreneurship are significantly different than in other global regions and could give rise to Venture-building models that are not easily replicable elsewhere. There are also country-level indicators that influence the dynamism and thus the potential for producing scaleups of the business environment (Bravo-Biosca et al., 2016), and these could in future be factored into the discussion.

Managerial implications. The results of this research could help inform Venture Capitalists to understand the potential returns they could receive by backing a Venture-Builder. It could help innovators who are considering pursuing the Venture-Building route or the Accelerator route to understand tradeoffs between the support they are receiving and the capital they are relinquishing. Finally, it could support policymakers who are considering promoting or supporting these types of initiatives as part of regional and national innovation strategies.

Originality of the paper. The paper attempts to shed light on the previously unexplored link between Venture Studio Design and the creation of scaleup companies. As the Venture Builders or Venture Studio model becomes more popular, different actors are experimenting with different designs according to their specific roles, objectives and experiences, we assess on a theoretical basis which of these models may be more suited to producing scaleups.

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Entrepreneurial Ecosystems: exploring the Italian Tech Scaleups scenario

SERENA VALENTE¹ ALESSIA PISONI²

Abstract

The ecosystem approach has increasingly attracted the interest of management scholars starting from Moore's contribution of 1993. Ecosystem literature has developed over time, differentiating ecosystems on the basis of attributes and goals. Among these, entrepreneurial ecosystems (EE) have recently emerged as a novel domain of research.

After the seminal work of Cohen (2006), EE research has been complemented by an increasing number of contributions. Based on extant literature reviews (Wurth et al., 2022), it took almost a decade for research focused on EE to flourish. Contributions span from theoretical work aimed at understanding what ecosystems are (Isenberg, 2010; Mason and Brown, 2014; Stam, 2015; Audretsch et al., 2019), which conceptual boundaries and goals they have (Stam, 2015; Stam and Spigel, 2016; Spigel, 2017; Cobben et al., 2022), how complementarities and interdependencies are managed (Feld, 2012; Stam, 2015; Spigel and Harrison, 2018), to empirical research aimed mainly at highlighting level and typologies of output (Brown and Mason, 2017; Audretsch et al., 2019; Stam and van de Ven, 2021).

A recently published systematic analysis of the EE literature stress the importance of "re-orienting research on entrepreneurship and economic development toward productive entrepreneurship" (Wurth et al., 2022: 731). The concept of productive entrepreneurship is sought to capture both EE output (entrepreneurship) and outcome (aggregate value creation). As stated by Stam and van de Ven (2021: 817), "there are no perfect measures of either entrepreneurship or aggregate value creation". In this respect, understanding the dimensions and indicators to be used to study productive entrepreneurship in this rapidly emerging research field represents a crucial issue (Cobben et al., 2022).

On this basis, we aim at contributing to this research need by focusing on scaleups as a proxy of productive entrepreneurship. Leveraging the privileged access to the Mind the Bridge proprietary database, we focus the analysis on the Italian tech scaleups scenario (Mind the Bridge Tech Scaleup Italy Report, 2023). We aim to provide an overview of its main characteristics with descriptive statistics and statistical analysis, by thoroughly investigating the scaleups' economic-financial performance, innovation performance, and markets served. Variables related to the founding team characteristics, such as founders' background and evolution over time are also considered. We also aim to identify common growth patterns both at national and regional level and their evolution over time.

Future research implies extending the study at the international level, with a preliminary focus on the European scaleup scenario.

At the time of writing the study is still in progress.

Key words: *entrepreneurship; entrepreneurial ecosystems; productive entrepreneurship; scaleup.*

Framing of the research. *Besides the fact that entrepreneurial ecosystems (EEs) have gained increasing popularity, a common definition agreed upon by researchers and practitioners does not yet exist (Stam and van de Ven, 2021; Wurth et al., 2022). The EE concept has two components. On the one hand, "entrepreneurial" refers to "a process in which opportunities for creating new goods and services are explored, evaluated and exploited" (Stam and van de Ven, 2021: 811, based on Schumpeter, 1934; Shane and Venkataraman, 2000). On the other hand, the "ecosystem" component is a transdisciplinary concept arising from the biology field (Stam and van de Ven, 2021; Theodoraki et al., 2022) characterized by three core features: co-evolution, mutualistic interdependence and a complex system of interactions among actors. Accordingly, EEs are defined as "a set of interdependent actors and factors" (Stam, 2015: 1765). These actors co-evolve, making the ecosystem of actors a complex interactive system (Stam and van de Ven, 2021).*

EEs consist of different typologies of actors, which can be traced back to the following categories: governmental organizations, financial actors as venture capitalists and investors, universities and support organizations such as incubators and accelerators, and independent orchestrators as individual entrepreneurs (Cobben et al., 2022). Each actor has a prominent role, depending on the stage of development of the specific EE (Guéneau et al., 2023). According

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to Auerswald and Dani (2017), there are four main stages of EE development, embedded in an adaptive life cycle, as ecosystems are dynamic and constantly adapt their structures. The development of EEs begins with the exploitation phase and matures into the conservation phase. At this point, the structure of the ecosystem becomes denser and more interconnected, i.e., more rigid. If a strong shock occurs, EEs enter the release phase, which is immediately followed by a reorganization phase.

Actors within an EE have two different perspectives and two main objectives: at the micro level, each individual ecosystem actor behaves in a way that maximizes its own economic growth, while at the macro level, each ecosystem actor seeks to maximize the economic development of the entire ecosystem, be it a nation, region or local area (Acs et al., 2018; Cobben et al., 2022). Both levels influence each other, as ecosystem actors are interdependent.

Actors and factors organized within EEs enable productive entrepreneurship (Stam and Spigel, 2016; Stam, 2015). Any entrepreneurial initiative is considered as productive when its net effect on productivity is positive, i.e., if it contributes to increase the overall output of the economy or improves its ability to produce more goods and services, either directly or indirectly (Baumol, 1993). Productive entrepreneurship contributes to economic growth by fostering innovation and technological improvements, the accumulation of human and entrepreneurial capital, and the replication of successful products and process innovations (Minniti et al., 2023).

According to Stam and van de Ven (2021: 817), an “entrepreneurial ecosystem is said to produce entrepreneurship as an output and ultimately aggregate value as an outcome”. However, “there are no perfect measures of either entrepreneurship or aggregate value creation”. According to Wurth et al. (2022: 731) the EE concept can contribute to policy making, by “re-orient[ing] research on entrepreneurship and economic development toward productive entrepreneurship”. In this respect, the concept of productive entrepreneurship (Stam, 2015) is sought to capture both EE output (entrepreneurship) and outcome (aggregate value creation).

Based on the evidence that startups and scaleups are seen as sources of innovation, productivity growth and employment (Mason and Brown, 2014; Autio et al., 2018), productive entrepreneurship is often narrowed down to high-growth entrepreneurship (Autio and Ranniko, 2016; Wurth et al., 2022). Accordingly, a high-quality EE is more likely to produce high-quality entrepreneurship (Stam and van de Ven, 2021; Minniti et al., 2023).

To date, empirical studies have proxied productive entrepreneurship with either innovative new firms/startups (Leendertse et al., 2022), high-growth firms (Stam and van de Ven, 2021), gazelles (Stam, 2018) and unicorns (Leendertse et al., 2022). Nevertheless, additional empirical research needs to be done (Minniti et al., 2023).

Purpose of the paper. The study attempts to investigate the performance/quality of entrepreneurial ecosystems, by specifically proxying productive entrepreneurship with scaleups. Despite the importance of “scaling-up” in contributing to improve national competitiveness (Audretsch and Acs, 1994; Gilbert et al., 2006; Audretsch et al., 2015; Mind the Bridge, 2019; Piaskowska et al., 2021), the definition of scaleup is still controversial (Coviello, 2019) and lacks of a common understanding (Pisoni and Onetti, 2023). Coviello (2019) argues that too often scaleups have been confused with “high-growth firms” (Demir et al., 2017) and that “scaling is not just about high-growth” (Tippmann et al., 2018; Coviello, 2019). Besides the definition, scholars agree on the fact that “scalability” is to be considered as a crucial aspect (Autio, 2016). For the purpose of our research, we adopt the definition of scaleup as “a development-stage business, specific to high technology markets, that is looking at growth in terms of market access, revenues, and number of employees, adding value by identifying and realizing win-win opportunities for collaboration with established companies” (Onetti, 2014; Startup Europe Partnership (SEP), 2015; Autio, 2016). Specifically, Startup Europe suggests a tangible definition for a scaleup: a new venture that has attracted 1 Million USD or more of venture capital funding. Besides the ongoing debate on the definition of scaleups, it is acknowledged the role they play in introducing technologies into the market (Coutu, 2014). Also, for their potentials to disrupt innovation- and entrepreneurial ecosystems in which they are embedded (Marcon and Ribeiro, 2021; Autio et al., 2018), they have been increasingly attracting the interest of scholars, practitioners and policymakers (Coutu, 2014; Onetti, 2014; SEP, 2015; Autio, 2016; Autio et al., 2018).

Methodology. To contribute to the study of the performance of EEs and leveraging the privileged access to the Mind the Bridge³ proprietary database, we focus the analysis on the Italian tech scaleup scenario with the aim to understand which are scaleups’ characteristics (either at the firm and team-levels), their growth path and the relationships established to conduct their innovative activities. The Italian context is particularly noteworthy for our analysis since it is currently experiencing a new big wave of productive entrepreneurship thanks to the Italian policy maker attention (Girauda, 2019; Matricano, 2020, 2022; Cavallo et al., 2021; Biancalani et al., 2022). By issuing the “Italian Startup Act”, the Italian policy maker aimed to provide a comprehensive legislative framework to foster the creation and growth of its entrepreneurial ecosystem, by providing benefits to all those entrepreneurial activities recognized as innovative and therefore productive (Italian Startup Act, 2019).

By thoroughly investigating the Italian scaleup scenario, we aim to provide an overview of its main characteristics with descriptive statistics and statistical analysis. With this purpose, we are investigating the scaleups’ economic-financial performance (either considering their fundraising path and their growth in terms of turnover, employees and

³ Mind the Bridge is a global organization that provides innovation advisory services for corporates and startups. In 2014, Mind the Bridge has been selected by the European Commission to lead Startup Europe Partnership (SEP). Established in January 2014 at the World Economic Forum in Davos, SEP is a Startup Europe initiative dedicated to support the growth and sustainability of European startups able to compete and raise funds internationally. Based on its proprietary database, Mind the Bridge regularly produce reports with the goal of sharing insights and data about startup/scaleup ecosystems in order to give relevant parties a macro overview of the current landscape (<https://mindthebridge.com/research/>).

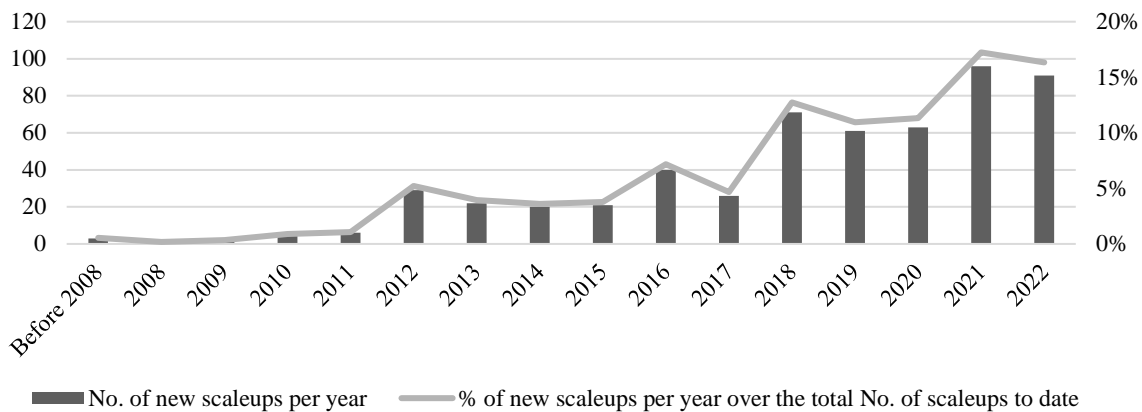
profitability margins), innovation performance (in terms of R&D, collaborations with universities/incubators etc., and the use of digital technologies), and markets served (in terms of customer segment and geographic scope). Variables related to the founding team characteristics, such as founders' background and evolution over time are also considered.

In doing so, we also aim to identify common growth patterns both at national and regional level and their evolution over time. Furthermore, the analysis of the Italian scaleup scenario represents the basis of future research extending this study at the international level, with a preliminary focus on the European scaleup scenario.

Results. At the time of writing, research is still ongoing. A preliminary analysis by focusing on the overall population of Italian tech scaleups has been conducted. As of December 2022, Italy is home to 557 tech scaleups (Mind the Bridge Tech Scaleup Italy Report, 2023).

Figure 1 shows the distribution of Italian tech scaleups by year. Prior to 2018, the Italian scaleup scenario was relatively small, with an average of approximately 20 new scaleups per year. However, from 2018 to 2020, Italy experienced significant growth, with an average of 65 new scaleups per year. In the last two years (2021-2022), the Italian scaleup scenario has continued to expand, producing nearly 100 new scaleups annually.

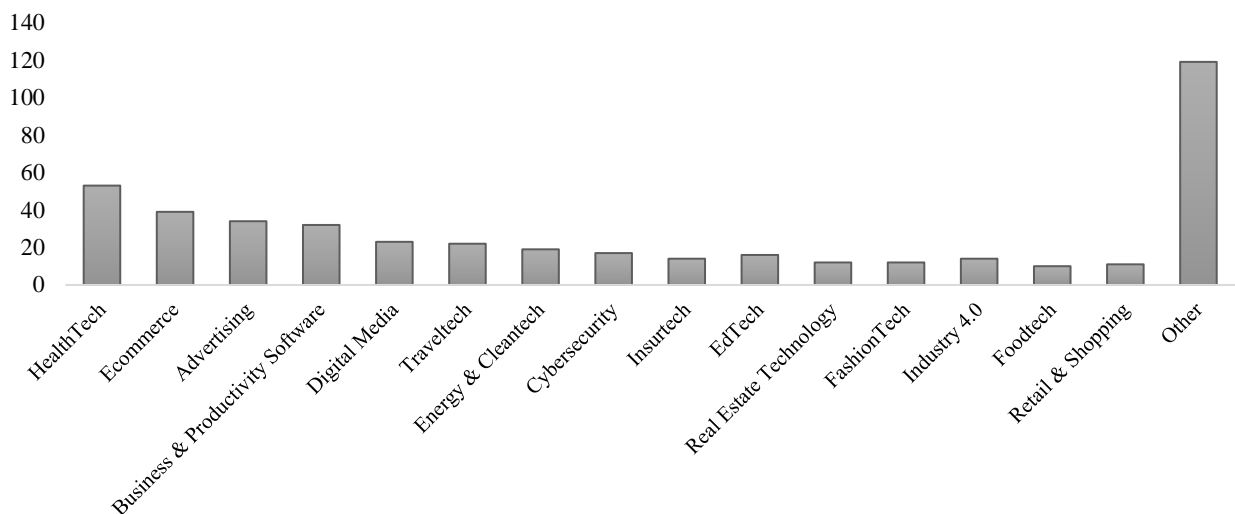
Figure 1: Distribution of Italian tech scaleups by year of establishment



Source: Personal elaboration based on MtB data (2023)

A tech scaleup is a company operating in the tech and digital industries (excluding biotech, life sciences, and pharma, as well as semiconductor industry verticals); founded in the new millennium, have had at least one funding event since 2010, and have raised more than 1 Mio USD in funding (Mind the Bridge, 2023). The concentration of Italian tech scaleups is significant in a few strategic industry verticals (Figure 2). The vast majority of scaleups focus in Healthtech, in Ecommerce, in Business & Productivity Software, and in Advertising. The 'Other' column groups industry verticals with scaleup frequencies lower than 10 (e.g., Aerospace, Agritech, Autotech, Fintech, Gaming, HR Tech, Logistics, Smart City/Home, etc.).

Figure 2: Italian tech scaleups industry specialization



Source: Personal elaboration based on MtB data (2023)

Italian tech scaleups have raised over 7 Bio USD. The vast majority of scaleups have had so far mainly 1-3 funding

event(s), raising on avg. 9 Mio USD. Sources of funding can vary considerably. They may include venture capital investments, which can come from private funds, public-supported equity funding vehicles, and corporates. Scaleups may opt also to go public - and retrieve funding from the stock market through an Initial Public Offering (IPO) - or issue cryptocurrencies in exchange for legal tender, through an Initial Coin Offering (ICO). Data show how Venture Capital (VC) is the main source of funding for Italian scaleups; while ICOs are uncommon, IPOs are increasingly considered as a viable option for scaleups to raise growth capital (i.e., 11% of total funding made available to Italian scaleups comes from the stock market). It is also worth noting how scaleups that opt for an IPO, rarely also raise VC money. Specifically, only 20% of scaleups that go public had previous VC rounds of financing (having raised on avg. 4.5 Mio USD); intuitively the vast majority of capital was raised during the IPO (on avg. 16 Mio USD, with a huge variability among). Thus, signaling how the IPO has been properly planned to secure funds to support the scaleup growth path.

It is also worth analyzing the distribution of the total funding over the lifespan of the scaleup. Intuitively, it is way different to have only one financing round when the scaleup is young compared to having only one financing round as a mature scaleup. Considering the scaleup older than 10 years (those who have experienced some history, and survived the lack of funding characterizing the Italian private equity market), we can draw some interesting considerations. The oldest among the scaleups considered had a limited number of funding events, but raised larger amount of funding, who allowed them to survive longer. The youngest (among the same considered scaleups) had more funding events, but relatively smaller in terms of amount raised, thus signaling a more fragmented fundraising path.

Results are in line with the so-called “dual companies” phenomenon (Onetti and Pisoni, 2021), i.e. scaleups that move their HQs abroad, while keeping relevant operations in their country of origin (usually R&D and product development). The main reason to relocate the HQs was to get access to capital, mainly later stage funding. Dual companies appear to be less widespread in countries where the venture capital industry is more developed, while it is a more frequent phenomenon in new emerging entrepreneurial/startup ecosystems (Onetti, 2017). Although a lot of progress has been made with regards to early-stage financing, the phenomenon is evolving in parallel with the growth of the venture capital industry in various regions and countries and needs to be monitored closely (Onetti and Pisoni, 2021)

The Italian scaleup landscape is mainly made of small companies. Firms can be classified based on their size, with the number of employees being one of the most common criteria (OECD, 2024). This allows for the identification of four size categories and corresponding company size definitions: micro, small, medium, and large enterprises⁴. As shown in Table 1, to date 85% of Italian tech scaleups are micro and small enterprises. Medium-sized enterprises account for only around 13%, while large enterprises account for just 2%.

Table 1: Italian tech scaleups by size (no. of employees)

No. of employees*	Size category	Percentage of scaleups (on the overall amount considered) per size category
0 - 4	Micro enterprise	25%
5 - 9	Micro enterprise	15%
10 - 19	Small enterprise	22%
20 - 49	Small enterprise	23%
50 - 249	Medium enterprise	13%
More than 250	Large enterprise	2%

Source: Personal elaboration based on MtB data (2023)

Note*: last year available

When evaluating the performance of Italian tech scaleups, we use the total sales. Table 2 shows that most scaleups have a turnover between 0 and 5 Mio euros, with peaks for those with a turnover between 0 and 100,000 euros. It is also worth noting a promising growth path for scaleups with a turnover higher than 2 Mio euros. Data show an interesting 11% of Italian tech scaleups with a revenue size between 10 and 50 Mio euros. However, only the 3% of overall Italian tech scaleups have a turnover exceeding 50 Mio euros.

We can thus conclude that the vast majority of Italian scaleups are still quite small (Table 1 and 2).

Table 2: Italian tech scaleups by total sales

Scaleups' turnover (thousands euros)*	Percentage of scaleups (on the overall amount considered) per category of turnover
0-100	19%
100.001-500	15%
500.001-1,000	12%
1,000.001-2,000	14%
2,000.001-5,000	17%
5,000.001-10,000	9%
10,000.001-50,000	11%
More than 50,000,001	3%

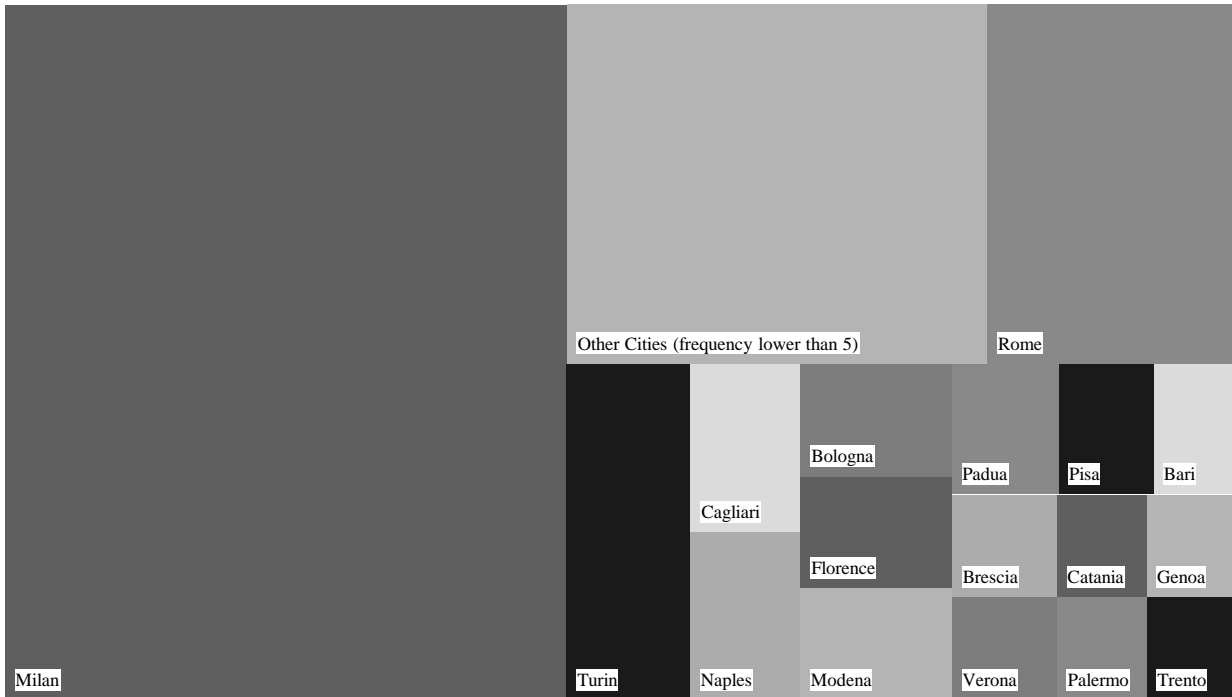
Source: Personal elaboration based on MtB data (2023)

⁴ A micro enterprise is a company with fewer than 10 employees, while a small enterprise has between 10 and 50 employees. A medium enterprise has between 50 and 250 employees, and a large enterprise employs more than 250 people.

Note*: last year available

By considering data at geographical level, it appears that scaleups tend to cluster around major financial centers. Accordingly, Figure 3 shows that the majority of Italian tech scaleups are headquartered in Milan, accounting for approximately 45% of the total population. A significant percentage of scaleups are located in various cities across the Italian peninsula. Specifically, 10% are in Rome, 5% in Turin, and approximately 2% in Cagliari, Naples, Bologna, Florence, and Modena. In Southern Italy three scaleup hubs are emerging around Naples, Cagliari and Bari. In Sicily, scaleups are concentrated around Palermo and Catania.

Figure 3: Italian tech scaleups geographic concentration



Source: Personal elaboration based on MtB data (2023)

It is also worth noting that some Italian local ecosystems are trying to leverage outside-in and inside-out initiatives to fuel their growth at scale. Examples are the innovation antennas in Silicon Valley by Sardinia Region (ASPAL) and Emilia-Romagna (ART-ER) as well as the ORA! initiative - the first territorial Venture Client scheme deployed in the broader Ravenna oil & gas, chemistry and waste management cluster.

As anticipated in the abstract, at the time of writing research is still ongoing. Variables related to the founding team characteristics, such as founders' background and evolution over time will be also considered in relation to scaleup characteristics and performance. Common growth patterns both at national and regional level and their evolution over time will also be highlighted.

Research limitations. Research is still ongoing. The focus on the Italian tech scaleup scenario might limit the generalizability of findings to other contexts or industries. Factors specific to the Italian ecosystem may not be applicable to other regions or sectors.

Managerial implications. Our study aims to improve the understanding of entrepreneurial ecosystems by using a data-driven approach that focuses on scaleups as their productive outcome. This study sets the stage for advancing our understanding of the role of scaleups in entrepreneurial ecosystems. In this regard, we focus on the underexplored topic of productive entrepreneurship in line with the research need highlighted by Wurth et al. (2022), i.e. to reorient entrepreneurship research towards productive entrepreneurship, and we stimulate the ongoing debate among practitioners and policymakers about scaleups and entrepreneurial ecosystems' policies development.

Originality of the paper. The novelty of this study lies in employing scaleups as a proxy of productive entrepreneurship in entrepreneurial ecosystems. By analyzing data from the Italian tech scaleup scenario, the study aims at providing empirical evidence on the characteristics, growth trajectories, and performance of scaleups within a specific context, addressing the call for more empirical evidence on EEs. Besides, being at an early stage of development, the study aims at providing useful insights for policymakers and practitioners.

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Innovazione e imprenditorialità femminile nelle PMI: un'analisi fuzzy dei driver della performance

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Abstract

Il presente studio si propone di esaminare quali combinazioni di attività e risorse promotrici dell'innovazione consentono di conseguire alte performance finanziarie nelle PMI innovative, discriminando tra PMI a conduzione femminile ed altre. Nel crescente dibattito sulla trasformazione delle PMI, l'innovazione riveste un ruolo sempre più centrale nello sviluppo di tali imprese le quali, contribuiscono in modo significativo alla crescita economica e alla competitività nazionale. Le attività innovative interne e le risorse riconducibili al capitale umano, ai brevetti e alla R&S vengono considerate come driver di innovazione capaci di influenzare le performance aziendali, ma non sempre garantiscono un impatto positivo nel lungo termine né una relazione lineare. Utilizzando una metodologia di analisi qualitativa comparativa del tipo fuzzy-set (fs-QCA), innovativa e adeguata allo studio di fenomeni caratterizzati da incertezza, i risultati preliminari dello studio suggeriscono che diverse combinazioni di investimenti in R&S, capitale umano qualificato e proprietà intellettuale, possono determinare una performance positiva per le PMI innovative, mentre l'imprenditorialità femminile non assume un ruolo preponderante e discriminante. Questo studio contribuisce alla comprensione della relazione complessa tra innovazione, imprenditorialità femminile e performance nelle PMI e offre importanti implicazioni manageriali e teoriche.

Key words: *innovazione, PMI innovative, fs-QCA, genere, performance, R&S, imprenditorialità femminile, brevetti, capitale umano*

Inquadramento della ricerca. *L'innovazione sta assumendo oggi un forte interesse come fattore guida della crescita delle imprese (Arcuri et al., 2023; Audretsch, Coad, et al., 2014), e svolge un ruolo cruciale nel ridisegnare il vantaggio competitivo delle piccole e medie imprese (PMI) (Arcuri et al., 2023; Montani et al., 2023), che, da una lato, si caratterizzano per la scarsità di mezzi (Costa et al., 2023; Vagnani & Proietti, 2023) e risorse (Antenzio & Di Bernardino, 2023; Costa et al., 2023), dall'altro contribuiscono alla crescita economica e alla competitività nazionale (Albis Salas et al., 2023; Audretsch, 2002; Audretsch et al., 2023; Vagnani & Proietti, 2023) rappresentando il 99% delle imprese europee nella maggior parte dei Paesi (OECD, 2021). L'innovazione diventa per le PMI un requisito imprenditoriale necessario per il conseguimento di un solido vantaggio competitivo, determinando solitamente la creazione di una proposta di valore unica e distintiva (Schumpeter, 1934), che a sua volta consente alla PMI di agire come motore per la competitività nazionale (Albis Salas et al., 2023; Antenzio et al., 2023; Audretsch, 2002). Pertanto, le PMI si trovano spesso a reinventare le proprie attività e a ridefinire le proprie risorse (Albis Salas et al., 2023; Antenzio et al., 2023), per alimentare nel continuo l'innovazione e rispondere adeguatamente ai cambiamenti tecnologici (Montani et al., 2023).*

Le attività interne di promozione dell'innovazione risultano essere dei driver che consentono di ottenere risultati ad alta performance anche nelle PMI (Arcuri et al., 2023; Matricano, 2023). Adottando la lente teorica della resource-based view, si rileva che gli investimenti in ricerca e sviluppo (R&S) costituiscono risorse interne strategicamente rilevanti, che agiscono come driver dell'innovazione (Albis Salas et al., 2023; Arcuri et al., 2023) e che favoriscono l'ottimizzazione dei processi, determinando un incremento della produttività delle PMI (Albis Salas et al., 2023). Tuttavia, atteso che tali risultati positivi non sempre si rivelano o si manifestano nel lungo termine, gli investimenti in R&S possono drenare lungamente le risorse finanziarie nelle PMI, agendo quindi negativamente sulla complessiva efficienza produttiva e sulla performance finanziaria e reddituale (Lee et al., 2019). Pertanto, gli investimenti in R&S possono non essere sufficienti per promuovere elevate performance, né la loro relazione con la sopravvivenza aziendale si qualifica sempre come lineare (Ugur et al., 2016). Per questi motivi è opportuno considerare altri indicatori di attività generatrici dell'innovazione e promotrici della performance, come la presenza di risorse uniche ed inimitabili tutelate da diritti di proprietà intellettuale (Audretsch, Segarra, et al., 2014). In letteratura tale variabile è utilizzata come parametro del grado di originalità e unicità della proposta di valore (Athreye et al., 2021) e la sua "esclusività" tutelata legalmente la rende una risorsa rilevante per il duraturo sviluppo della PMI (Matricano, 2023). Tuttavia, i brevetti di per sé, pur

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costituendo una condizione necessaria per qualificare una PMI come innovativa, necessita della combinazione di altri processi e risorse per condurre la PMI ad elevate performance e, sovente, la redditività generata da tale investimento tarda a manifestarsi (Tagliatalata & Barontini, 2024). Alcuni studi evidenziano come misurazioni quantitative basate esclusivamente sul numero di brevetti non sono sufficienti per valutare adeguatamente l'impatto sulla performance delle PMI (Burrone, 2005; Macdonald, 2004), essendo necessaria una variabile qualitativa che descriva il tipo di innovazione tutelata (Agostini et al., 2015). Inoltre, appare incerta la direzione della relazione tra brevetti e performance finanziaria della PMI: taluni autori rilevano la presenza di relazioni positive (Agostini et al., 2015; Maresch et al., 2016), altri rilevazione relazioni negative (Power & Reid, 2021), taluni nessuna associazione (Griliches et al., 1991).

In letteratura anche il capitale umano emerge come un fattore chiave per il vantaggio competitivo delle PMI (Kiefer et al., 2022) e per la redditività aziendale (Xu & Li, 2019), impattando positivamente sugli utili e sull'efficienza operativa delle imprese (Kiefer et al., 2022; Xu & Li, 2019). Tuttavia, risultati contrastanti nell'interazione tra innovazione e performance nelle PMI sono stati riscontrati in alcuni studi. Sebbene studi manageriali riconoscano all'innovazione una valenza propulsiva, per elevare la capacità competitiva (Audretsch, Coad, et al., 2014; Porter, 1980), sviluppare capacità dinamiche (Eisenhardt & Martin, 2000) e, favorire la sopravvivenza delle imprese (Audretsch et al., 2020), specialmente nelle PMI (Arcuri et al., 2023), si rileva, d'altro canto, che il processo di innovazione può portare ad elevati tassi di insuccesso, compromettendo la performance e aumentando il profilo di rischio dell'impresa (Li & Atuahene-Gima, 2001; Scherer & Harhoff, 2000). Lo studio delle relazioni tra attività di innovazione e performance rivela una rinnovata attenzione alla diversità di genere nel top management team aziendale. Diversi studi dimostrano che tale requisito della governance contribuisce all'innovazione (Lee & Chung, 2022; Talke et al., 2010; Xie et al., 2020), alla performance dell'impresa (Talke et al., 2010; Yang et al., 2019) e ad un orientamento strategico multistakeholders (Talke et al., 2010). Tuttavia, studi recenti dimostrano che le imprese con un maggior numero di donne nel board direzionale generano meno innovazioni d'impatto e sono capaci di generare una crescita cumulativa e sistemica nel mondo produttivo (Lee & Chung, 2022), atteso che una prevalenza della componente femminile nel board, si correla ad una minore propensione al rischio rispetto alle imprese con un maggior numero di dirigenti uomini (Yang et al., 2019).

Nonostante l'innovazione ed il genere costituiscano un filone di crescente interesse, mancano ancora studi che mirano a comprendere quali fattori, inclusa la componente di genere, e quali risorse nella PMI rappresentino condizioni necessarie e sufficienti per promuovere un'adeguata performance economico-finanziaria.

Obiettivo del paper. Questo studio mira a investigare la relazione tra gli input di innovazione e le performance reddituali nelle PMI innovative, osservando quali combinazioni di investimenti in R&S, capitale umano qualificato e proprietà intellettuale sono in grado di generare elevata redditività delle vendite. Al fine di comprendere anche la valenza discriminante della variabile di genere, l'analisi esplora tali combinazioni distinguendo le PMI innovative a conduzione femminile dalle altre PMI innovative. Lo studio si pone l'obiettivo di offrire contributi empirici al dibattito accademico sulle determinanti dello sviluppo delle piccole e medie imprese innovative, con particolare riferimento all'imprenditorialità femminile. Inoltre, esplorando l'interazione tra i driver dell'innovazione, lo studio mira a indirizzare verso l'adeguata implementazione delle attività e delle risorse ritenute necessarie e sufficienti al raggiungimento di un determinato outcome.

I risultati forniranno preziose informazioni sulla promozione dell'innovazione nel contesto delle PMI innovative femminili mirando a far avanzare la discussione teorica su (i) gli input di innovazione (investimenti in R&S, capitale umano qualificato, proprietà intellettuale), (ii) l'avanzamento dello sviluppo delle PMI innovative, e (iii) l'imprenditorialità femminile, offrendo anche implicazioni manageriali.

Metodologia. Questo lavoro utilizza il metodo fuzzy-set qualitative comparative analysis (fs-QCA) per investigare il fenomeno in esame. Questa tecnica differisce dai metodi statistici convenzionali (Pappas & Woodside, 2021; Ragin, 2008; Woodside, 2013) poiché esplora come vari fattori causali contribuiscono a un risultato specifico, fondato sull'idea che quest'ultimo dipenda dalla combinazione di caratteristiche causali, piuttosto che sui valori isolati di tali caratteristiche (Ragin, 2008). Questo processo consente di avere un insieme effettivamente conciso di driver, quali fattori di input di innovazione tecnologica che influenzano in modo significativo il risultato finale (outcome).

In accordo con Ragin (2008), sono state calibrate le condizioni o input (investimenti in R&S, capitale umano e proprietà intellettuale) e la variabile di risultato o outcome (performance misurata dal ROS). In secondo luogo, è stata condotta l'analisi delle condizioni necessarie distinguendo il cluster delle PMI femminili dalle altre PMI e, infine, sono state sviluppate la tabella di verità e l'analisi delle condizioni sufficienti seguendo le linee guida proposte da Schneider and Wagemann (2012). Nel presente studio, i termini "presenza" o "assenza" di condizioni sono stati adottati per semplicità come equivalenti di appartenenza e non appartenenza a condizioni o insiemi di risultati (Torres & Augusto, 2020; Zoppelletto & Bullini, 2022) sia per le PMI femminili che per le PMI non femminili. Pertanto, l'analisi delle condizioni necessarie verifica se la presenza o l'assenza di una condizione è necessaria per la presenza (ROS) dell'esito. Per l'analisi delle condizioni sufficienti viene presa in considerazione la soluzione intermedia. Infine sono state effettuate analisi di robustezza modificando le soglie di calibrazione (Skaaning, 2011) e impiegando l'analisi delle condizioni sufficienti e la tabella di verità per l'assenza dei risultati (Zoppelletto & Bullini, 2022).

In particolare, il campione utilizzato si riferisce alle 2.695 PMI innovative italiane con un time-frame di 10 anni (2013-2022) che permette una maggiore comprensione dell'andamento delle performance negli anni. L'imprenditorialità femminile viene evidenziata nel campione considerando la composizione in prevalenza femminile nel capitale sociale e nel consiglio d'amministrazione se superiore al 50% del totale, utilizzando i dati forniti da ciascuna PMI innovativa al momento dell'estrazione (Arcuri et al., 2023).

La scelta del contesto italiano deriva dalla forte caratterizzazione del tessuto produttivo nazionale ancorato al

modello della PMI (Antenozio & Di Berardino, 2023; Matricano, 2023; Vrontis et al., 2020), che nel territorio nazionale trova un solido riconoscimento normativo proprio grazie alla presenza di risorse riconducibili agli investimenti di R&S, proprietà intellettuale e capitale umano qualificato (Matricano, 2023). Inoltre, nel più ampio dibattito sull'imprenditoria innovativa e femminile (Antenozio et al., 2023; Arcuri et al., 2023; D'Angelo, 2012; Vagnani & Proietti, 2023), l'Italia presenta un elevato livello di impegno nello sviluppo dell'innovazione grazie anche alle differenziate politiche di investimento locale che impattano diversamente sulla crescita delle PMI e del capitale umano (Antenozio et al., 2023; Matricano, 2023)

Le variabili presenti all'interno del modello derivano da due diverse fonti: (i) sezione speciale del "Registro delle Imprese" contenente l'elenco di tutte le PMI Innovative operanti in Italia al momento della consultazione secondo la letteratura (Antenozio & Di Berardino, 2023; Arcuri et al., 2023; Cavallo et al., 2020; Matricano, 2023) per il capitale umano qualificato e la proprietà intellettuale; (ii) database AIDA (database del Bureau van Dijk), comunemente impiegato per ricercare, analizzare ed elaborare informazioni economiche, finanziarie e commerciali, tutte le imprese italiane, comprese le PMI innovative (Antenozio & Di Berardino, 2023; Arcuri et al., 2023; Muhammad et al., 2021) per gli investimenti in R&S e ROS.

In particolare, il modello prevede tre variabili di input "Investimenti in R&S", "Capitale umano qualificato", "Proprietà intellettuale". Nello specifico la variabile "Investimenti in R&S" è stata costruita come rapporto tra il totale delle immobilizzazioni immateriali e gli assets totali dell'impresa (Arcuri et al., 2023). Questa variabile è strettamente legata al livello di innovatività di un'impresa (Hervas-Oliver et al., 2021) e ampiamente utilizzata in letteratura (Arcuri et al., 2023; Matricano, 2023). La variabile "Capitale umano qualificato" è misurata attraverso una dummy (0-1) ed è associata positivamente agli utili, redditività ed efficienza operativa dell'impresa (Xu & Li, 2019). La tipologia di interazione tra capitale umano e tecnologia rende le PMI competitive e attraenti, riuscendo a superare le barriere dovute alle risorse limitate e ai fondi scarsi. La "proprietà intellettuale" invece, misurata anch'essa da una dummy (0-1) è riferita all'unicità dell'azienda che porta un vantaggio competitivo, in accordo con la letteratura (Hervas-Oliver et al., 2021; Liu et al., 2023). Infine, l'outcome preso in considerazione è il ROS, indice di performance aziendale espresso in punti percentuali. Questo è indicatore della redditività estraibile dalle vendite ed è sintomo della forza competitiva della proposta di valore emergente dall'innovazione, legalmente tutelata nei mercati di sbocco, nonché rappresenta una proxy delle risorse autogenerate dalle vendite come autofinanziamento (Arcuri et al., 2023) e profitto (Caputo et al., 2022), utili per il futuro sviluppo della PMI.

Risultati. Risultati preliminari evidenziano un'interessante relazione tra le attività di innovazione e la performance reddituale, confutando le premesse teoriche del presente studio. Per gli investimenti in R&S, capitale umano e proprietà intellettuale quali input di innovazione, i due cluster non mostrano differenze specifiche in termini di condizioni necessarie e sufficienti andando a sottolineare come il genere della leadership non sembra influenzare la relazione tra queste condizioni e la performance finanziaria misurata dal ROS. Inoltre, da un lato, nessuna delle attività di innovazione è in grado di spiegare da sola un alto livello di performance e, al contrario, gli investimenti in R&S sono una condizione che da sola non produce efficienza; dall'altro, esistono due percorsi per ciascun cluster che combinano le differenti attività innovative per il raggiungimento di una performance elevata. Il primo percorso accosta gli investimenti in R&S con il capitale umano mentre, nel secondo percorso il capitale umano si combina con la proprietà intellettuale. In questo modo sia le PMI innovative femminili che quelle non femminili possono raggiungere elevate performance finanziarie. Questi risultati sono in linea con la letteratura attuale, confermando l'importanza della concatenazione di attività innovative per il raggiungimento di un risultato ottimale.

Limiti della ricerca. Questo studio presenta alcune limitazioni legate alla natura quantitativa della ricerca. Innanzitutto, lo studio si concentra su un solo paese, una limitazione comune alla maggior parte degli studi quantitativi, che risentono ampiamente dei fattori presenti nei diversi contesti istituzionali, i quali potrebbero limitarne la generalizzabilità delle conclusioni. Tuttavia, l'Italia è considerata un contesto adeguato a indagare la relazione tra PMI e sviluppo innovativo grazie alla considerevole variazione e distribuzione del campione su eterogenei clusters geografici aventi tassi di sviluppo socio-economico differenziati. In secondo luogo, la comprensione attuale degli input di innovazione risulta ancora frammentata, per cui utilizziamo solo tre variabili di innovazione quali dati quantitativi, trascurando l'analisi della dimensione qualitativa di tali risorse, in termini di contenuti del brevetto, tipologia di capitale umano, ambito degli investimenti in R&S, elementi che potrebbero indirizzare futuri sviluppi della ricerca. In terzo luogo, ci sono diversi modi per calibrare le variabili nel modello della fs-QCA analisi che potrebbero portare a risultati diversi. Studi futuri potrebbero esplorare differenti dimensioni della governance, quali le forme di imprenditorialità giovanile e straniera, nonché ulteriori elementi di innovazione generando nuovi risultati e arricchendo la letteratura accademica sull'argomento.

Implicazioni manageriali. Le due principali implicazioni teoriche di questo studio si riferiscono, da un lato, all'evoluzione della misura tradizionale dell'input di innovazione come gli investimenti in R&S, in quanto, oggi, questa variabile è da considerarsi non sufficientemente esplicativa dell'innovazione, soprattutto nelle PMI. Di conseguenza, abbiamo proposto altre variabili utili a valutare tale fenomeno, che potranno essere utilizzate in futuri studi empirici per valutare l'innovazione nelle PMI innovative, contribuendo alla RBT e alla comprensione delle risorse strategiche interne per l'innovazione. D'altro canto, proponiamo di studiare l'innovazione nelle PMI con un approccio metodologico innovativo come la fs-QCA. Inoltre, questo studio mira a offrire anche diverse implicazioni manageriali relative all'innovazione e alla performance delle PMI. In primo luogo, suggerisce che gli investimenti delle PMI in R&S non sono

più sufficienti da soli a migliorare la capacità delle PMI femminili e non femminili di generare un livello importante di performance. In secondo luogo, da un punto di vista strategico, le PMI devono indirizzare le proprie scelte di investimento verso un combinato sviluppo delle attività di R&S, formazione e valorizzazione del capitale umano e tutela della proprietà intellettuale.

Originalità del paper. L'interesse verso la trasformazione tecnologica e l'avanzamento digitale e innovativo del mondo attuale ha spinto molte imprese, di piccole e grandi dimensioni a perseguire queste iniziative. Tuttavia, gran parte della ricerca si è concentrata principalmente sulle grandi imprese e, studi sulla performance delle piccole e medie innovative, trascurano la visione sistemica della interazione tra input diversi dell'innovazione. D'altro canto, studi specifici sulle piccole e medie imprese innovative a conduzione femminile necessitano di maggiori approfondimenti proprio per la dimensione dei driver di innovazione. In questo articolo, proponiamo di colmare queste lacune nella letteratura andando ad indagare la relazione tra le attività innovative perseguite e performance finanziarie, concentrandoci sul ruolo dell'imprenditorialità femminile all'interno delle PMI innovative. Dato il background teorico, lo studio si propone di indagare la presente relazione con una metodologia di crescente attenzione (fs-QCA), che differisce dai modelli statistici convenzionali e che cerca di esplorare come diversi fattori contribuiscano ad un risultato atteso e specifico, fondando la sua struttura sull'idea che uno specifico risultato dipenda dalla combinazione di caratteristiche causali piuttosto che sui singoli valori. In particolare, questo studio è tra i primi che indaga il modo in cui diverse combinazioni di attività innovative portino ad elevate performance finanziarie nelle PMI innovative con una ulteriore focus sull'imprenditorialità femminile.

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Track 2
Innovation & Technology Management

Beyond Words: Leveraging Language for Strategic Decision-Making in Innovation

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Abstract

This short paper is a work in progress in which we aim at investigating the role of language in how teams make sense of disruptions and cope with uncertainty during strategic or innovative-related decision-making. Lately, scholars have been focused on the influence of temporal structure on how teams restore action after disruptive events and retrospectively make sense of the disruptions (Awati & Nikolova, 2022; Sandström & Schildt, 2022). In this body of literature, we propose an emphasis to understand how language affects the decision-making of teams in uncertain circumstances using the theoretical lenses of sensemaking. To do so, by collaborating with a leading strategic innovation company based in Switzerland, we aim at performing a research experiment at the team level using video ethnography observations and open-ended questionnaires to collect feedback. We believe our work can contribute to literature on strategic innovation and decision-making, as well as providing interesting insights for managers and companies operating in international markets.

Key words: *innovation; decision-making; uncertainty; research experiment.*

Framing of the research. *Language is a multifaceted and complex construct (Brannen et al., 2014) that is essential in “the process of constructing organisational, social, and global realities” (Lauring & Klitmøller, 2015: 47). Scholars have demonstrated how foreign language can have a significant influence on an individual's cognitive abilities (Baddeley, 2003), decision-making (Keysar et al., 2012), and attitudes towards innovation (Hadjichristidis et al., 2017). Language diversity within teams can be acknowledged through several indicators, including the number of languages spoken, the level of proficiency, and the influence of diverse backgrounds on interpretation (Kassis-Henderson, 2005). Moreover, it is important to differentiate between language and communication, as both have distinct implications and play key roles in the diffusion of information. Language skills refer to the ability to use specific sounds and grammatical structures of a particular language to convey meaning (Brannen, 2004), while communicative competence involves the ability to establish deeper and more effective agreements and understanding through discussion (Leung, 2005). Language skills are embedded in individuals (Angouri & Piekkari, 2018), and can influence team dynamics (Welch et al., 2005), whereas communicative competencies depend on both the sender and receiver of the message (Karhunen et al., 2018). The complementarity between language and communication enables individuals and teams to create shared meaning (Cohen & Kassis-Henderson, 2012).*

According to research, using a variety of linguistic resources to create meanings and exchange knowledge about strategic and innovative solutions during the development of new ventures can have significant consequences for decision-making (Snihur et al., 2021). In the context of decision-making, language also serves as an advantage in team power dynamics where linguistic factors (e.g., proficiency disparities) influence the members' ability to use power sources, including hierarchical positions (Tenzer & Pudelko, 2017), which in turn affect collaboration and decision-making. Additionally, studies have shown how individuals engage in continuous sensemaking and feedback integration to navigate the uncertainty surrounding decision-making, particularly when undertaking decisions related to innovative solutions (Pryor et al., 2016). This integration involves ongoing language use and social interaction among team members as they attempt to understand ambiguous situations and new events.

A recent review by Whittle et al. (2023) categorised the sensemaking literature, discussing how the organisational meaning-construction process is linked to the distinct functions of the different linguistic forms, based on three approaches: language and cognition, language and discourse, and language and social practice. The cognitive linguistic approach highlights the role of language in reflecting and shaping the mental structures and in understanding how people interpret circumstances and actions (Hill & Levenhagen, 1995). This area of research defines the frame as a mental

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template through which individuals make sense of their environment (Walsh, 1995). The second line of research is the critical discursive perspective that focuses on the structures of meaning through which individuals comprehend and exert power, where discourses incorporate the “systems of thought” (Phillips et al., 2004). The third line of research is that of language and social practices that cover different perspectives, including narratives, rhetorical, and interactionist perspectives. The narrative perspective views language as a storytelling tool that structures discursive forms to support individuals in understanding their experiences (Brown et al., 2015). From this perspective, language is pivotal in shaping a new reality for organisational members (Dunford & Jones, 2000). The rhetorical approach highlights the persuasive nature of language in shaping the “sense-making” of different stakeholders (Maitlis & Lawrence, 2007). This persuasive use of language, also known as “sense-giving” (Gioia and Chittipeddi, 1991), aims to influence other individuals’ interpretation and understanding of information in shaping a desired perception of reality. Strategies of persuasion include lexical choices, content, and tone of language (Bilgili et al., 2017). The interactionist perspective views language as a tool for observing real-time interpretations and actions that shape social organisation within a group (Weick, 1995). This approach highlights various forms of interaction, including strategic decision-making (Rouleau & Balogun, 2011), power dynamics (Tourish & Robson, 2006), cue interpretation using frames (Bolander & Sandberg, 2013), work group coordination and collaboration (Einola & Alvesson, 2019), and technology and material artefacts (Cornelissen & Werner, 2014). Within the interactionist approach numerous methodologies have been employed, including the micro-ethnographic technique of analysing video recordings of healthcare teams (Christianson, 2019), grounded analysis primarily in observational data (video-audio recordings and transcripts) (J. S. Liu & Lu, 2012), and ethnomethodologically informed discourse analysis of tape-recorded meetings (Whittle et al., 2016).

Purpose of the paper. Until the early part of the 21st century, language in the realm of business and management lacked the formal recognition it deserved, unlike the closely associated concepts of culture and communication. While occasional mentions of language might have surfaced in subdisciplines like marketing, communication, and international business (IB), there was no cohesive research community or significant focus on the subject. The publication of special issues in *International Studies of Management and Organization* in 2005 (see Piekkari and Zander, 2005) and the *Journal of World Business* in 2011 (see Piekkari and Tietze, 2011) marked pivotal moments in highlighting the emergence of active researchers in this area. Finally, in 2014, the *Journal of International Business Studies (JIBS)* (see Brannen et al., 2014), renowned as the leading IB journal and the sole publication used by the *Financial Times* for its global journal rankings, released its inaugural special issue dedicated to this topic, further solidifying the significance of language in business and management literature.

This study aims to contribute to the field of innovation by highlighting the influence of language diversity (i.e., variety of languages spoken within a group of people) on team strategic or innovation-related decision-making using the theoretical lenses of sensemaking. Both ‘sensemaking’ and ‘language’ are dominated by the concept of uncertainty, as sensemaking helps actors navigate uncertain situations and make decisions in rapidly changing contexts as innovative ones (Sandström & Schildt, 2022), while language involves a degree of uncertainty and change in how it is used and understood (Degen, 2023). Research defines sensemaking as the process of creating meaning and understanding in complex and uncertain settings, while decision-making involves the selection of a course of action based on this understanding (Brown et al., 2015; Parmar, 2014). On the one hand, sensemaking lays the foundation for decision-making by shaping how individuals perceive and interpret their surroundings (Winch & Maytorena, 2009). On the other hand, decision-making provides feedback and new information that can influence future sense-making (Lipshitz et al., 2006). These interconnected processes mutually influence each other in organisational settings such as teams.

To advance the literature within the realm of management, in particular in entrepreneurship and innovation, we make use of different literatures that have dealt with the role of language diversity in team decision-making, including international business research (Brannen et al., 2014; Hadjichristidis et al., 2017; Tenzer & Pudielko, 2020; Volk et al., 2014) and organisational studies (Brannen, 2004; Kassis-Henderson, 2005; Lockwood et al., 2019; Rouleau & Balogun, 2011; Tourish & Robson, 2006; Whittle et al., 2016, 2023). However, our paper aims to contribute to the role of language diversity in innovative and entrepreneurial decision making, hence, we also integrate with emerging literature from strategy and entrepreneurship (Pryor et al., 2016; Welch et al., 2005), as well as linguistics (Degen, 2023; Leung, 2005), and psychology (Keysar et al., 2012) when appropriate. We employ an experimental method to replicate the decision-making procedure using a software designed to enhance innovation skills in organisational settings (e.g., Sparkademy). The feedback module (i.e., proxy for the decision-making process) within this software also includes the feature to record real-time interactions among team members. With our methodological approach, we respond to the call for contributing to the field of sensemaking by examining the relationship between language and decision-making processes through multimodal analysis (e.g., video-ethnography) (Whittle et al., 2023). This study is grounded in the interactionist perspective, which seeks to examine real-time decision-making processes within a multilingual team. However, we recognise the cognitive linguistic approach as a foundation for understanding how individuals interpret situations and actions, as well as the role of language in conveying meaning and information from team members. Hence, we aim to explore how language diversity is integrated into social interactions, while being mindful of the cognitive processes as antecedents of our results (Baddeley, 2003; Volk et al., 2014).

Methodology. Recent literature in entrepreneurship and innovation have highlighted the need to further empirical research in these fields using research experiments (Stevenson and Josefy, 2019; Williams et al., 2019; Grégoire et al., 2019; Morales et al., 2017). We answer this call by employing a research experiment to understand how language diversity influences a team’s innovation decision-making process. The research experiment at the team level will be supported by using video ethnography observations and open-ended questionnaires to collect feedback. At first, we aim

to conduct a pre-pilot test and non-intrusive observations with PhD-level students (around 16 individuals) to collect preliminary results and improve our experiment. Subsequently, once adjustments have been made, a pilot with master-level students from innovation and entrepreneurship courses. We plan of involving in the pilot around 90 master-level students, who will be divided into groups of three people for a total of 30 groups, where 15 groups speak the same language (i.e. common language is the individual's native tongue) and the other 15 groups were language-mixed (e.g. lingua franca is English). In particular, the control group will be the Italian-speaking group (i.e., native language group), whereas the mixed language groups include both those groups where the lingua franca is no one's mother tongue, as well as groups that will be able to capture the relative majority of language choice. This setting allows us to have at least three iterations of interaction among team members. Students will be recruited from master level course in an Italian university that includes both native and Erasmus students. Hence, participants will speak a different language, as well as they will have different levels of English proficiency (students will be assessed on their proficiency using the LexTALE test⁴). The experiment will be conducted in a virtual space. We modelled our pilot test research design based on previous studies using business students as proxies in business decision-making contexts (Song et al., 2022) to evaluate the launch of a new product (i.e., innovation setting).

To simulate the decision-making process, we collaborate with Sparkademy (a leading strategic innovation company based in Switzerland) which gave us access to part of their three-part module (aimed to tackle corporate innovation), in particular, they offered us the feedback module. We envision feedback as a proxy for the decision-making process of team members. In this module, participants are required to evaluate their team members on their LinkedIn CV. The completion of the module is approximately 1.5 hours. In the introduction, the Sparkademy module instructs the participant on how to provide constructive feedback through an interactive video. Subsequently, team members will have to introduce themselves, including their country of origin, and share stories about the great feedback they have received. Once instructions and introductions have been performed, the module then develops into four exercises: i) preparing for constructive feedback, in which participants exchange their LinkedIn profiles and then proceed to deliver written feedback (individual task); ii) sharing feedback with the team (team task); iii) reflecting on the received feedback (individual task); and iv) asking for further feedback (team task). All these parts are performed on the Sparkademy platform, which has the option of recording the video of team dynamics when exchanging feedback. Subsequently, an individual questionnaire will be used as a follow-up to map the decisions taken following the received feedback.

Expected results. The current study aims to understand which and how language characteristics (i.e., language choice, language structures, or frames) that are critical for teams when engaging into sensemaking and trigger peculiar mechanisms of decision-making in innovative contexts. The preliminary results of non-intrusive observations have shown how the feature of language diversity that defines our sample, influences those groups where their native language is spoken, leading to a smoother team interaction and enhanced intra-team comprehension. In contrast, we expect that in teams where English is the lingua franca, sensemaking may be hindered due to misinterpretations and difficulties of comprehension leading to understandings and decisions that might not be shared and fully comprehended by all team members. In fact, interacting with team members in English and thinking in their native language affects how individuals understand problems, feel emotions, and therefore make decisions (Keysar et al., 2012). The difference lies in how foreign and native language processing varies regarding instinct and conscious thought (Costa et al., 2014), and approach towards innovation (Hadjichristidis et al., 2016). Moreover, as a result of the distinct language structures present in the languages of team members, variations in reactions and final decisions following feedback are anticipated. This is because language structures have an impact on perceptions, thoughts, and actions (Chen, 2013; Hechavarria et al., 2017). This is a work in progress and the final results will be available following the research experiment and online survey.

Research limitations. Our work in progress entails some limitations. First, it focuses on a sample of students, and this choice may limit research's generalisability. Second, decision-making related to strategic innovation usually involves several factors, as a complex set of values and characteristics may play a role in this kind of decisions; however, empirically we were limited in the choice of factors (and variables) we could include in the experiment. Future research may address these limitations by replicating the experiment in other settings and including different variables which may influence the relationship between language and decision-making.

Managerial implications. This research aims to provide entrepreneurs and managers with recommendations to leverage language as a strategic tool in organisational activities to undertake innovative decisions. Indeed, the role played by language-structure in different firm's activities point to potential applications in terms of value creation, competitiveness, creativity, innovative outcomes and the creation of a more inclusive environment. Alongside language-structure, also language choices have key implications for organisations: a multilingual environment within firms may foster diversity in activities related to goal-definition and resource allocation, allowing for a more informed strategic planning, with positive returns for firms and for the economy in general. Indeed, research has shown that multilingualism may spur economic growth (World Economic Forum, 2018 - [ps://www.weforum.org/agenda/2018/02/speaking-more-languages-boost-economic-growth/](https://www.weforum.org/agenda/2018/02/speaking-more-languages-boost-economic-growth/)), in that it tears down not only language boundaries within the firm but also in its communication flows with stakeholders, customers and investors.

⁴ Lemhöfer, K., & Broersma, M. (2012). Introducing LexTALE: A quick and valid Lexical Test for Advanced Learners of English. *Behavior Research Methods*, 44, 325-343. See also: <https://www.lextale.com/whatislextale.html>

Originality of the paper. *Our research aim at contributing to several streams of the scientific literature. First, results will inform strategic and management literature by fine graining the mechanisms through which language impacts on innovative decision-making. Second, our research project will inform entrepreneurship literature, which has started investigating the role of language in shaping investors' perceptions and triggering specific financial measures (e.g., earnings management; precautionary cash holdings). However, we lack a deep understanding of how these perceptions are shaped and how language can be leveraged when undertaking decisions about entrepreneurial and innovative ideas. Finally, we also contribute to refine the use of research experiments in empirical studies within the fields of entrepreneurship and innovation, as well as we respond to the call for contributing to the field of sensemaking by examining the relationship between language and decision-making processes through multimodal analysis (e.g., video-ethnography).*

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Combining innovation and business networks for resource mobilization in the meat sector: a case study

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Abstract

This study explores how SMEs in the meat sector mobilize resources for innovation, focusing on the intertwining of business and innovation networks. The research adopts a qualitative approach, based on an exploratory case study methodology, and relies on the business network perspective as the theoretical and analytical lens. The innovative setting under investigation is related to the “Suino della Marca” project in the Marche Region, Italy. Preliminary findings reveal a non-linear project trajectory marked by bureaucratic hurdles and strategic shifts. The startup Impronta Verde emerges as a key actor orchestrating business and innovation networks and addressing challenges such as financial constraints and market uncertainty. The study underscores the importance of resource mobilization, including financial and human resources, and the role of governmental support in fostering collaborative initiatives. While limitations include the preliminary nature of findings and reliance on one round of interviews, the research holds the potential to offer insights into resource mobilization through both business and innovation networks, using creative approaches and establishing new connections among key emerging actors, with implications for theory and practice.

Key words: *innovation networks; meat industry; SMEs; ARA framework*

Framing of the research. *The meat sector has undergone significant transformations in recent years due to emerging challenges and changing factors, such as increased consumer demand for sustainable and ethically sourced products, new technologies advancing production and distribution processes, new markets, and stricter safety requirements (Maples et al., 2019; Golini et al., 2017; FAO, 2017). Such an evolving business landscape requires firms active in the industry to adapt and change strategies and organizational configurations to maintain their competitiveness and pursue new paths in their markets. This implies investing resources in innovative activities, adopting new organizational forms and mechanisms and involving other actors in the supply chain.*

While large firms - often with a multinational dimension - have developed over time adequate capabilities to cope with market uncertainty and changes, small and medium-sized enterprises (SMEs) in the meat supply chain, usually located in rural settings, might face additional hurdles, and suffer a negative impact due to such unexpected new evolutions (Peón and Martínez-Filgueira, 2020). Indeed, SMEs suffer from limited resources in terms of skills, funding, and knowledge, which are essential for the pursuit of innovation processes (Mersico et al., 2023; Radas and Bozic, 2012).

The literature has widely demonstrated that SMEs might recur to networking and collaborative agreements with other firms and organizations, increasingly facilitated by collective initiatives and projects, to obtain access to resources and upgrade their innovative profile to remain competitive (Radas and Bozic, 2012; Ortega-Argilés et al., 2009). Despite the benefits of such collaborative efforts, there is a gap in the literature regarding the mechanisms and outcomes of networking and partnership initiatives among SMEs in the meat sector, particularly concerning resource mobilization for innovation.

Purpose of the paper. *The main objective of this study is to gain a better understanding of the main processes concerning resource mobilization by SMEs active in the meat supply chain while pursuing innovative projects. This analysis will emphasize two distinctive and interrelated aspects:*

- i) the co-existence and intertwining of business and innovation networks, where the business networks are described as the result of informal and emerging interactions between organizations, while innovation networks have a deliberate and conscientious nature, and are guided by consensus among members regarding specific objectives to be achieved (Rubach et al., 2017; Mota et al., 2023);*
- ii) the main patterns concerning resource access, development, and combination (Baraldi et al., 2012; Bocconcelli et al., 2020), in the light of SMEs' limited capabilities.*

In order to address these research objectives this ongoing research adopts the Business Network perspective (Håkansson et al., 2009) and notably its main conceptual underpinnings concerning the nature of business and innovation

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networks (Rubach et al., 2017) and the resource development and mobilization processes, as emerging from the actors-resource-activities framework (Håkansson & Snehota, 1995).

Methodology. The study applies a qualitative case study methodology (Yin, 2003; Halinen & Törnroos, 2005). The case study in focus concerns the “Suino della Marca” innovation project, which has been implemented in the Marche Region, shaped by the initiatives of firms, supply chain stakeholders and organizations of producers, with the aim to create a local quality product based on a genetic line from the Marche Region.

Data collection is ongoing and is based on a combination of primary and secondary data sources. As the primary source of data, semi-structured interviews (Kvale & Brinkmann, 2009) have been conducted to account for the perspective of the main actors involved in the project: Baldi Carni, a local firm active in the agri-food sector which has taken the lead of the project, and Impronta Verde, the newly created startup taking care of brand management and committed to carry through the innovation path by providing resources and know-how. Preliminary interviews have been conducted with (1) the CEO of Baldi Carni and co-founder of Impronta Verde; (2) the Project Manager in charge of the “Suino della Marca” project; (3) the Manager of Impronta Verde. Project factsheets, the companies’ websites, the Marche Region official platforms as well as articles from local newspapers, constitute secondary data sources and have been used to track the project’s process and phases, interdependencies, key facts, and main results.

Data analysis follows a systematic combining approach (Dubois & Gadde, 2002), highlighting the interplay between the research object, methodology, and theory. The empirical analysis relies on the business network approach, and it has been guided by the ARA framework (Håkansson & Snehota, 1995). The ARA framework describes the content of business interaction in three interrelated layers: actors’ bonds, resource ties, and activity links. The three layers are highly interconnected as activities are performed by actors, who use resources and what happens in a specific relationship impacts not only the individual organization but also its relationships and the wider network. The framework appears suitable for investigating the role of key actors, both existing and emerging ones, the nature of activities carried out within and beyond the project’s boundaries, and the relevant resource mobilization processes.

Results.

1. Empirical findings

The “Suino della Marca” project started in the early 2000s with the primary aim of developing an autonomous Marche genetic type, a new breed of pig. The project’s trajectory has not followed a linear path over time and has been marked by significant shifts and challenges over time. Initially launched in 2006, the project underwent an experimental phase but was nearly abandoned shortly after due to bureaucratic hurdles. The project gained renewed attention in 2021 and is now back on track, moving towards full-fledged breeding. Overall, two main phases of the project can be highlighted: the first experimental phase from 2006 to 2009 and the second one from 2021 and still ongoing, where a new key actor, Impronta Verde, has taken the lead.

The first phase saw the setting up of the project, sponsored by the Marche Region following the increasing requests of the producer associations (i.e., Consorzio del Salame di Fabriano) and aimed to create a new genetic line - a rustic pig since the region was lacking a native breed - possessing the characteristics of Italian breeds and good zootechnical performance. The main partners of the project were the Marche Region, Università Politecnica delle Marche of Ancona, Università di Camerino, and Assam (now AMAP), which is the Agency for Innovation in Agribusiness and Fisheries “Marche Agricoltura Pesca”.

The universities involved designed and conducted the “hybridisation plan” by developing a crossbreeding program aimed to maximize heterosis and the degree of combinability, using five Cinta Senese boars and twenty Italian Large White sows. The hybridisation plan and crossbreeding program eliminated any risk of inbreeding and provided a high degree of combinability. However, as mentioned above, the hybridization process and the overall project have been stopped due to bureaucratic hurdles, and especially due to the failure of the breeders’ association that was formally the owner of the animals. The project therefore came to a halt in 2009 and remained at a standstill until 2021.

In more recent times, the Marche Region started to search for a firm or organization willing to continue the genetic program already approved by the Ministry of Agricultural Food and Forestry Policies within the national register of hybrid producers of pigs. Emiliano Baldi, owner of the medium-sized company Baldi Carni, expressed interest in taking the lead of the project, aligning with the vision of the company. This led to the creation of the startup Impronta Verde, with ownership of the herd and the involvement of a zootechnical entrepreneur.

However, embarking on such a project entailed major risks for Baldi due to the legacy of the project and of the sow farm and because it implied a substantial change and transition for the company, engaging in a new upstream phase of the supply chain, thus requiring comprehensive management of the pork supply chain. Impronta Verde faced high costs and operational challenges in managing new assets without a market presence, feedback, and economic return and with the need to enlarge the sow farm to reach the economic break-even point.

Impronta Verde has then signed a new agreement with the universities of Ancona and Camerino for the completion of selection and technical assistance in the early stages of breeding and has recently managed to involve two farmers for fattening located in the Marche Region. Marketing and promotion activities, including tests to understand the right sales and distribution strategy to be applied, have been undertaken. To date, B2C channels (Baldi’s shop, butcher’s stores...) are providing a better response, due to the reputation and legitimacy that Baldi has gained in the territory. The long-term objective of the project is to introduce the “Suino della Marca” as raw material in the production processes of other chains and expand genetic efforts by creating a configuration to transfer the breeding while protecting the intellectual property and ownership of the genetics.

Baldi Carni is a founding partner of Impronta Verde and aims to become the orchestrator of a network of breeders to promote a collective actor who is also competitive in accessing public funding, participating in bids, and can acquire critical mass and relevance in the eyes of the public stakeholders. With this objective in mind, Baldi has promoted the creation of a network thanks to the involvement of a consultant active in the setting up of a cooperative organization and the search for breeders in specific territories and marginal areas. The search for new partners is implemented through the involvement of local producers in training sessions concerning key innovative themes in pork farming. This activity is carried out autonomously, in cooperation with the local veterinary services and the Zooprofylactic Institute, generating positive results in terms of interest and public recognition in the local breeders' community. However, at this stage, the active involvement of farmers and breeders in the project is impaired by the uncertainties related to normative and bureaucratic hurdles at the local, regional, and European levels, the diffusion of the African swine plague which requires substantive investments in biosecurity, the changes in prices due to the exacerbated costs of the raw materials following the war and the post-COVID period, and the significant changes in meat consumption.

The “Suino della Marca” innovation project shows synergies with other regional complementary projects, such as “SAImarche”, an itinerant slaughtering project, addressing logistical challenges associated with the lack of slaughterhouses in the Marche Region and of non-full loads. By addressing logistic relationships, it is aimed at small livestock farmers but also agro-tourism farms that want to take advantage of extensive breeding opportunities, but do not know how to transport the animals to slaughterhouses. The project solves the problem linked to the lack of a structured relationship between the various actors (extensive breeders, farms, transporters, slaughtering...) by means of a container to be transported to an area close to a small number of farms for slaughtering purposes. Finally, Impronta Verde is also promoting a project aimed at providing free veterinary services to small farmers to provide them with the requirements to get involved in the “Suino della Marca” project. Summing up, the underlying objective of the “Suino della Marca” project is to provide the region with its own genetic prototype, with a wider horizon to create a stable network of farmers around this new genetic line.

2. Preliminary discussions of findings

Three primary insights emerge for further reflection that can be filtered through the three dimensions of the ARA framework (Håkansson & Snehota, 1995). First, the analysis provides insights into the characteristics of the innovation networks in the meat sector around the new genetic type, especially in terms of the plurality of actors involved, from business to governmental institutions, and universities, and highlighting the emergence of new actors for the purpose of innovation. A key actor in the “Suino della Marca” innovation project is Impronta Verde, an entrepreneurial initiative that formally owns the project, takes care of the brand management, and is committed to bringing the project to an end. This new actor, which interacts with firms (such as Baldi Carni), small farmers, and institutions such as public universities, is also in charge of the creation of a supply chain built around the new genetic line, the coordination of activity between supply chain actors and their aggregation under a common supply chain project. Impronta Verde represents a case of creative entrepreneurship in a complex supply chain context; this actor could play the role of orchestrator, effectively combining and connecting business and innovation networks (Andresen, 2021; Rubach et al., 2017).

The second insight concerns the main patterns of resource mobilization and interaction in place, in terms of access, development, and combination (or lack of integration). When looking at resource development and access in SMEs active in innovation processes, the pivotal role of financial resources emerges: the strengthening of business and innovation networks is a key evolution for gaining access to government support and funding. Also, the importance of organizational resources, in terms of human resources, is highlighted, as shown by Impronta Verde. The role of “orchestrator” is shaped by the availability of adequate personnel as technical complexities emerge and a wider variety of networks and projects have to be coordinated. Finally, synergies among projects and projects' resources are increasingly pursued, in light of the high interdependence among the different phases and actors of the meat supply chain. Such interdependencies and synergies represent an opportunity for fostering collaboration among different actors for the purpose of innovation.

Third, pursuing and implementing resource mobilization and development across business and innovation networks in the meat sector is further constrained by the structural market uncertainty and variability affecting many value chain activities, such as the one related to genotype development, activation of production partners, and marketing and distribution. The development of an innovative project such as “Suino della Marca” could therefore show a nonlinear evolution, shaped by changes of various nature - technological, business, institutional - and by the subsequent “networking” behavior by key actors in business and innovation networks.

Research limitations. *This paper is a work in progress and, therefore, presents various limitations in terms of data collection at this stage. The empirical analysis is based on a first round of interviews with key informants belonging to the leading actors in the business and innovation networks, that is Baldi Carni and Impronta Verde. In the next phases of the research, additional interviews will be planned with informants belonging to other firms and organizations active in both business networks - particularly around the meat value chain - and innovation networks, such as universities and regional governments.*

Managerial implications. *The results of this research have relevant managerial implications. For small- and medium-sized firms and organizations, the pursuit of an innovative project in the meat sector is a very complex challenge for the variety of settings and contexts to be dealt with, increasing the uncertainty concerning both the process and the*

final outcome. Overcoming obstacles and unexpected changes requires i) a careful assessment of the features and combination and business and innovation networks to be involved and/or set up; ii) the ability to effectively mobilize resources through such business and innovation networks, using creative approaches - as shown by the set-up of Impronta Verde - and establishing new connections among key emerging actors.

Originality of the paper. This ongoing study aims to enhance our comprehension of the main processes underlying innovation-related business relationships and networks of SMEs in the meat supply chain, using the “Suino della Marca” project as an explorative case study. The development of this specific area of research seems appropriate in light of the increasing interdependences and newly emerging challenges in the meat sector (Golini et al., 2017; Caccialanza, 2023), such as the abuse and misuse of antibiotics (Van Boeckel et al., 2017; Waluszewski et al., 2021), which require innovative measures (at the product, process, and organizational level) for mitigation and imply the adoption of coordination structures and governance mechanisms within networks.

This paper brings to the forefront the co-existence of business networks and innovation networks, showing different characteristics and only partially overlapping and intertwining with each other (Mota et al., 2023). While the business network appears more consolidated, the innovation networks surrounding the innovative initiative under investigation struggle to emerge and develop. Such difficulties underscore the importance, on the one hand, of fostering SMEs’ propensity to undertake cooperative initiatives promoted by public institutions (Munksgaard & Medlin, 2014) and, on the other hand, highlight the need for the regional government to include well-defined strategies that actively supports the establishment and interaction of business and innovation networks in its policymaking.

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The role of purpose in digital companies: a study on Exponential Organizations

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Abstract

The significance of purpose in business cannot be overstated. It acts as a guiding force, steering organisations towards meaningful societal contributions beyond mere profit maximisation. Scholars increasingly highlight its diverse implications for effective management amidst evolving societal expectations and digital transformation. Purpose-driven strategies align organisational goals with broader societal objectives, fostering shared identities among stakeholders. Articulating and centralising purpose within organisational culture and values significantly influences corporate brand identity. In the dynamic digital landscape, purpose emerges as a pivotal element for corporate branding, amplifying credibility, fostering customer engagement, and fortifying organisational resilience. Despite its acknowledged importance, a gap remains in understanding purpose's influence on corporate brand identity, particularly within digital companies. Therefore, this paper aims to address this gap by focusing on the case of Exponential Organizations (ExOs). ExOs leverage digital business models and technologies to grow exponentially while incorporating Massive Transformative Purpose (MTP) as a distinctive characteristic. This study explores how the MTP influences the brand identity dimensions of ExOs through qualitative analysis. The Corporate Brand Identity Matrix (CBIM) model is applied to analyse primary data gathered from in-depth interviews conducted with managers of two selected ExOs, supplemented by secondary data from internal and external sources related to the chosen cases. The paper contributes to the academic discourse on the impact of purpose on corporate brand identity, offering insights into brand differentiation, stakeholder engagement, and strategic alignment in the digital age. Additionally, this research provides managerial implications for brand purpose management, offering valuable insights for managers of digital companies.

Key words: purpose; digital business model; corporate brand identity; ExO; MTP

Framing of the research. *The incorporation of qualitative and creative elements within the organisational framework is inherently intertwined with fundamental concepts such as “vision”, “mission”, “values”, “purpose”, and “brand image” (Collins & Porras, 1991; Urde, 2013). This amalgamation is intricately linked to the firm's essence, serving as a strategic asset in management and collectively playing a pivotal role in shaping the organisation's identity (Henderson, 2021). The contemporary academic discourse has again brought this topic to the forefront, echoing sentiments expressed nearly 80 years ago. Indeed, Drucker (1974) characterised the management's neglect of business purpose and mission as a critical factor in business frustration and failure. However, in the present scenario, there remains a persistent challenge in understanding these qualitative elements, often deemed as “fuzzy”, necessitating deeper exploration to grasp their implications for business management. Younger et al. (2020) propose a model that establishes a hierarchical structure, positioning each concept from the core to the periphery of the organisation, progressively encompassing the others. The vision represents the “where” dimension, signifying the organisation's ultimate aim. This overarching level frames the other three dimensions, namely “what” (mission) the firm does/produces, “how” (values) it operates, and “why” (purpose) the organisation exists. The purpose stands at the core of the conceptual framework, emerging as a foundational driver for business growth and reflecting a notable resurgence of interest within the management literature (Henderson, 2021).*

Henderson and Van den Steen (2015) conceptualise purpose as a specific objective for a firm that extends beyond the pursuit of profit maximisation. Mayer (2018) posits that the purpose is rooted in the company's fundamental reason for existence and meaningful contribution to society, shaping its goals and strategic direction (Jimenez et al., 2021). However, the renewed interest in purpose among scholars highlights the intricate diversity of this concept entwined in exploring its implications for business management, particularly in the context of new digital businesses (George et al., 2021; Jimenez et al., 2021).

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George et al. (2021) present two perspectives to harmonise definitions of purpose. The “goal-based purpose” focuses on organization-specific aspects, delving into corporate mission, vision, and strategies. Meanwhile, the “duty-based purpose” centres on moral and ethical values, with recent studies exploring company values and organisational engagement in social and environmental initiatives. In this regard, Porter and Kramer (2006) assert that businesses carry a moral imperative, explicitly tying the creation of competitive advantage to their societal responsibilities. This implies crafting a solution beyond corporate philanthropy, emphasising a sustained commitment to generate value for all stakeholders. The overarching goal is to bolster productivity and foster prosperity within the community. Building on this perspective, Aßländer & Curbach (2014) contend that corporations must undergo a transformative evolution, transitioning into a new role as active contributors to the community. This shift involves a departure from a self-centric focus, urging corporations to assume the role of societal actors and exhibit responsible behaviours.

According to Hollensbe et al. (2014), an organisation's purpose involves cultivating a shared identity that aligns shareholder value with broader societal goals. The nexus between corporate and social purposes becomes pivotal, facilitating the alignment of business objectives with heightened political awareness and increased social engagement (Lawton et al., 2020; Patriotta, 2021). Accordingly, Vredenburg et al. (2020) delineate purpose-driven strategy as a deliberate stance on socio-political issues, intending to effect social change and achieve marketing success. Furthermore, Mayer (2021) underscores the imperative for companies to meticulously identify, articulate, and centralise their purpose within their operations. This exertion substantially shapes organisational identity, culture, and values, highlighting the critical significance of delineating how companies present themselves to customers and employees. This strategic process assumes a pivotal role in the creation and effective communication of image and value.

In light of these considerations, the purpose has recently assumed a central role in shaping the corporate brand identity (Urde & Greysen, 2016), primarily due to its ability to make the company's societal impact visible (Annweiler, 2018). Hajdas and Kleczek (2021) advocate purpose-driven branding initiatives, emphasising their potential to empower users, stimulate transformative processes, and contribute to social and cultural impact. This strategic approach is an impetus for developing innovative managerial practices, allowing brands to broaden their societal influence, sway customer perceptions, actively contribute to social change, and enhance their value. The current dynamic landscape of consumer expectations underscores the imperative for brands to provide functional benefits and exhibit a clearly defined social purpose (Henderson, 2021). Therefore, credibility, considered a pivotal factor by stakeholders, can be enhanced through purpose, manifesting the organisation's essence (Cullinan et al., 2021). Calder (2022) also advocates for the seamless integration of a brand into its positioning, affirming its integral status within the larger context. Hence, embracing a defined purpose confers substantial advantages to a brand and is crucial in enhancing community outreach (Hsu, 2017). This perspective resonates with Bonchek's (2013) emphasis on customers actively seeking inclusion, a sense of belonging, and opportunities for meaningful engagement.

The prominence of corporate brand identity and purpose has heightened with the onset of the digital era, especially among born-digital companies (Mingione & Abratt, 2020). Digital technologies offer unparalleled opportunities and challenges in today's business environment. Nevertheless, the field of branding has yet to fully adopt the dynamic mindset essential for navigating this rapidly evolving landscape (Von Wallpach et al., 2017). Emerging brands leverage the digital wave, utilising digital business models to create value with consumers while prominently highlighting their values. Within this context, a brand identity rooted in a solid and credible purpose enhances the customer experience and is a strategic differentiator in the competitive digital landscape (Filho et al., 2024). It also amplifies the effectiveness of digital marketing efforts and employee engagement (Birkinshaw, 2019). Veloutsou and Guzman (2017) underline technology's significant impact on daily consumer lives, highlighting the pivotal role of social media in consumer empowerment. Therefore, a prominent online presence that aligns with the corporate purpose cultivates transactional trust and ensures the brand is recognised and valued across diverse digital platforms (Veloutsou & Guzman, 2017). Additionally, a well-defined brand purpose empowers digital companies to swiftly adapt to rapid changes and emerging trends while maintaining a distinctive core brand identity.

Purpose of the paper. Purpose emerges as a pivotal factor in shaping brand identity, providing stakeholders with heightened clarity regarding their affiliations and the brand's overarching commitment to social and environmental issues (Cullinan et al., 2021). The purpose becomes a pertinent component of brand identity (Mirzaei et al., 2021) and is intricately linked to its inspirational aspects, extending beyond mere profit considerations. Thus, the brand purpose can elicit specific perceptions and profoundly impact consumers (Filho et al., 2024). Notwithstanding advancements in the study of brand purpose, the academic inquiry remains incipient (Narayanan and Das, 2021). Recent exploratory investigations suggest the potential of brand purpose to engender value for consumers and contribute to brand equity (Hsu, 2017; Annweiler, 2018; Hajdas & Kleczek, 2021; Williams et al., 2022; Filho et al., 2024). However, a gap exists in the literature, as extant research has not explicitly delved into the ramifications of purpose on brand identity. Specifically, there is a dearth of studies into how and to what extent purpose influences the various dimensions of brand identity, particularly the implications for value creation stemming from consumers' and companies' perceived value of purpose. Furthermore, although significant expertise has been cultivated in comprehending product/service brands, the same level of understanding is lacking regarding corporate brands and related issues (Urde & Greysen, 2016). The lack of studies focusing on companies adopting a digital business model encompassing both born-digital and transformative digital enterprises appears notable, given the anticipated substantial benefits of integrating purpose into brand identity management.

Hence, this paper seeks to contribute to the nascent academic literature on brand purpose management by addressing the following research question:

RQ: How does the integration of purpose influence the building of corporate brand identity in companies implementing a digital business model?

The paper aims to comprehend the mechanisms and extent to which purpose can influence and yield benefits for corporate brand identity across all dimensions. Specifically, the study explores how declaring and adopting purpose as a core brand value can enhance the value proposition.

Methodology. *Two primary considerations guide the selection of the research methodology. First and foremost, the nature of the research question significantly shapes the choice of methodology, favouring a qualitative research approach as the most suitable means to examine this complex phenomenon thoroughly. Secondly, qualitative methodology is considered a preferred research option for scholars investigating business identity, particularly the “softer aspects of management” that include the purpose (Henderson, 2021). Balmer (2001) also underscores the importance of case study research, recommending naturalism in investigating business identity management. Applying case study methodology is also considered indispensable in the early stages of theory development (Gill & Johnson, 1991). This is notably pertinent in analysing the case surrounding the scrutiny of brand purpose.*

In this qualitative investigation, we focus on Exponential Organizations (ExOs) as they present a substantial case study to address the research question. ExOs represent a contemporary phenomenon with disruptive implications stemming from the digital revolution. Coined by Ismail et al. (2014) in their seminal work, “Exponential Organizations: Why New Organizations Are Ten Times Better, Faster, and Cheaper than Yours”, the ExO concept delineates a distinct category of digital enterprises “whose impact or output is disproportionately large - at least 10 times larger - compared to its peers because of new organisational techniques that leverage accelerating technologies”. Prominent examples of ExOs include Airbnb, Google, and Spotify, exemplifying the success achievable within this unique category of digital firms. Since the book's publication by Ismail et al. (2014), a robust community of practitioners has coalesced, evolving into what is now recognised as the OpenExO Community. This community has burgeoned into a global movement, encompassing more than 6,500 individuals from 130 countries (Allen, 2020). This growth has facilitated Ismail's establishment of a business consultancy grounded in ExO principles, harnessing practitioners as a dynamic community capable of serving as a reservoir of on-demand personnel.

From an academic standpoint, Marchese et al. (2020) undertook a comprehensive literature review to delineate the key elements characterising ExOs. Their work identified three primary strands within the literature contributing to understanding the ExO concept: organisational design, strategy, and technological innovation. According to their findings, an ExO is defined as an entity that can enhance its dynamic capabilities by amalgamating digital technologies, experimentation, and autonomy in organisational models. This adaptability allows the ExO to align with its context and achieve exponential results fully (Marchese et al., 2020). Pompa (2019) supplements this perspective by asserting that the success of an ExO hinges on two critical factors: access to information technologies and innovative organisational models. In this context, digital business models and technologies emerge as fundamental components that provide the framework for ExOs. Notably, digital platforms serve as the catalysts for exponential growth by effectively matching the demands and supplies of the market. Furthermore, digital platforms present opportunities for scalability, capitalising on positive network effects and fostering business prospects through value co-creation with customers. Each facet of their digital business model is pivotal in the accelerated growth that characterises ExOs.

*Furthermore, our emphasis on ExOs stems from their purpose-driven characteristic. Ismail et al. (2014) explicitly incorporated the concept of Massive Transformative Purpose (MTP) as a central element defining an ExO. The MTP serves as the fundamental *raison d'être*, adhering to specific prerequisites, particularly uniqueness. In detail, for an MTP to be deemed Massive, it must possess a global scope and be linked to either a novel or pre-existing abundance (Ismail et al., 2018). The overarching idea is for the MTP to wield substantial influence, harnessing the exponential acceleration of technology. Moreover, the Transformative aspect of the MTP necessitates it to be highly aspirational and inspiring, identifying a dimension beyond current possibilities and contributing to positive global change. This underscores the interconnectedness of these businesses with society, recognising that their prosperity is intricately tied to the well-being of the larger community. Lastly, the Purposeful criterion dictates that the MTP should elucidate the *raison d'être* of the organisation (Ismail et al., 2018), aligning seamlessly with the earlier definition of purpose we discussed previously. In addition to this definition, Dimitrov (2022) has recently contributed to understanding MTP by identifying its core as a cherished culture that engenders significant impact within and beyond the organisational sphere. This culture catalyses effecting profound change, leveraging operational excellence and business innovation as critical mechanisms. Through this lens, the MTP functions not only as a guiding principle but also as a dynamic force that drives continuous improvement and fosters innovation, ultimately leading to tangible outcomes that extend far beyond the confines of the organisation itself.*

In light of the considerations above, ExOs emerge as compelling case studies due to their status as a burgeoning global phenomenon. They encapsulate the two focal aspects investigated in the current study: digital business models and purpose.

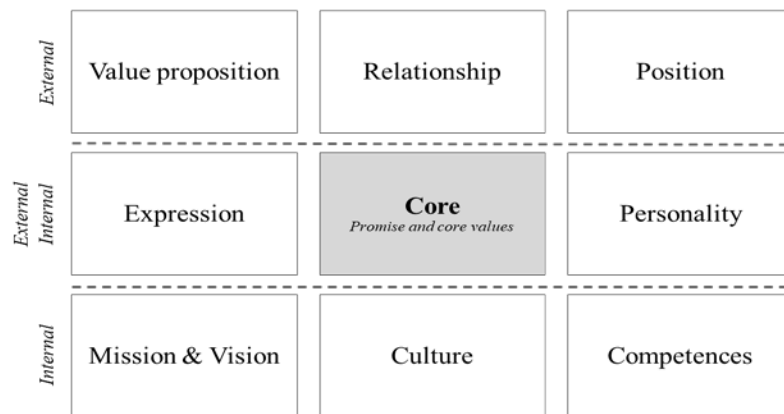
We strategically selected two prominent ExOs for in-depth examination: Airbnb, which illustrates the characteristics of a digital-native company, and Mylia, which embodies the outcome of a transformative digital evolution. These organisations operate within distinct sectors, with Airbnb prominent in the hospitality industry and Mylia specialising in learning and development consulting. A compelling and impactful purpose underpins each. Airbnb's MTP of "Belong

Anywhere" resonates globally, addressing the universal human experience and potentially reaching every destination worldwide. This MTP, fostering a sense of being "part of something larger", has been strategically positioned at the core of Airbnb's company culture, representing a significant competitive advantage. Furthermore, Airbnb holds a position in the Unicorn Club, having adopted a digital business model since its inception in 2007, solidifying its status as a digital-native company. This strategic alignment with digital principles has contributed to Airbnb's success and evolution. Conversely, Mylia was established with a fresh perspective and cultural ethos, crafting a new digital business model dedicated to training courses. Today, Mylia is one of the leading entities in the Italian training market. As a part of the Adecco Group, Mylia was launched in 2018 with the MTP of "Advancing Humanity". This MTP was identified during a transformative journey that commenced in 2016. This dual exploration of Airbnb and Mylia provides a comprehensive examination of ExOs operating in different sectors, each driven by a powerful purpose and embodying unique digital business models.

The development of our cases draws upon a combination of primary and secondary data, ensuring a comprehensive and in-depth analysis of the chosen ExOs. This dual-source approach enhances the robustness of our investigation, enabling us to glean valuable insights into the intricate dynamics of digital business models and purpose within the context of ExOs. A rigorous approach was adopted to identify, contact, and actively involve executives from Airbnb and Mylia in systematically investigating the chosen ExOs. Two in-depth interviews were conducted with key managers for Airbnb on April 9th, 2021, and March 17th, 2022. The first manager, a former advertising executive and brand specialist, played a pivotal role in defining Airbnb's corporate purpose, overseeing the Airbnb Community. The second manager holds the position of Country Manager for the Italian market. In the case of Mylia, seven interviews were conducted in April and May 2021. Four of these interviews involved leadership team members, while one manager was the Project Manager responsible for R&D and Innovation. All interviews were conducted remotely using Microsoft Teams as the collaborative platform, ensuring accessibility and efficiency in the data collection process. Simultaneously, primary data from interviews was complemented with information gathered from internal sources, such as corporate reports and documents. Additionally, external sources, including social networks and websites, were explored to augment the dataset. The data was coded systematically using the open-access tool Taguette.

This comprehensive methodology facilitated a meticulous and transparent analysis, adhering to the rigorous standards of academic research in terms of both precision and reproducibility. The interview questions were carefully structured, drawing inspiration from Urde's "guiding identity questions" explicitly tailored for probing the implementation of the Corporate Brand Identity Matrix (CBIM) model (Urde, 2013). We utilised the CBIM Urde (2013) to explore and analyse the collected data from the two case studies. Based on their impact, this matrix categorises dimensions into external, internal, and mixed, establishing interconnected relationships that influence the brand. The harmonious alignment of all nine dimensions and consistent interrelation fortify the brand (Figure 1).

Figure 1. Corporate Brand Identity Matrix (CBIM) model.



Source: Urde (2013)

Placed at the centre of CBIM, the "brand core" functions as an analytical tool and an operational guide (Urde, 2013). This dimension defines promises and core values that directly influence the other eight areas of the model. The other dimensions include "expression", which pertains to the verbal and visual manifestation of the brand, and "personality", which focuses on the brand's character. Both aspects simultaneously impact the organisation's internal (sender) and external (receiver) facets. The "mission and vision", "culture", and "competencies" constitute the internal dimension of the brand, closely tied to organisational values. On the other hand, the "value proposition", "relationship", and "position" represent the external dimensions of the brand, concentrating on interactions with both customers and non-customer stakeholders. Hence, the selection of the CBIM model stems from its capacity to offer a dynamic approach to delineating a firm's identity, presenting a comprehensive framework for exploring and comprehending the multifaceted impact of purpose on corporate brand identity. In this context, the MTP (i.e., purpose) is presumed to be integrated into the brand core, playing a pivotal role in shaping and influencing the other dimensions within the CBIM framework.

Results. From the collected information, we identify and describe the corporate brand identities of the two selected ExOs. We present the overall coherence between dimensions and use Urde’s four dynamics (2013) to explain the role of the MTP in creating alignment between them.

The strategy diagonal involves the dimensions of Mission and Vision, Core, and Position. In the case of Airbnb (Figure 2), the MTP “Belong Anywhere” is present in the firm’s mission statement and is often even used when discussing the vision. While also representing the promise of the brand, the MTP is key in clarifying Airbnb’s position in the hearts and minds of customers, being used extensively in advertising and communication.

The horizontal communication requires the dimensions of Personality and Expression to be aligned with the Core. At Airbnb, the MTP has been visually translated into a symbol. The “Bélo” is an abstract figure defined as “a symbol of belonging”. Similarly, Airbnb’s corporate character is represented by its founders, particularly by the CEO, Brian Chesky. He was the first host to rent apartment beds and pioneer Airbnb’s business model. Moreover, he often refers to the MTP when starting his public communication. Amidst the workforce adjustments prompted by the COVID-19 pandemic, he articulated the significant challenge of managing the situation, particularly for a company like theirs, whose mission is deeply invested in fostering a sense of belonging.

Figure 2. CBIM of Airbnb.



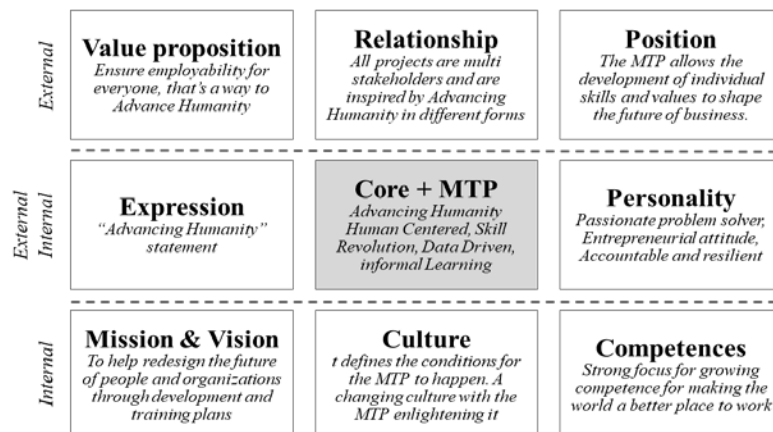
Source: Authors’ elaboration

In the case of Mylia (Figure 3), the MTP “Advancing Humanity” emerges as an element of the Core, inspiring the other eight dimensions of the corporate brand identity.

The competition diagonal involves Competencies, Core and Value Proposition. Since its birth, Mylia has invested in developing internal competencies to improve the world. An example of this can be found in the job description for the role of Learning Designer (Focus on Green Transition). At the same time, the MTP also directly influences the value proposition. “Human Centered” is the first pillar of Mylia’s proprietary L&D framework. As a result, Mylia’s Product Change Academy won the “Prodotto Formativo 2021” Prize as the best learning and development product introduced in the market in 2021 (Polotti, 2021).

Finally, the relationship vertical concerns how the firm deals with various stakeholders. In different interviews, Advancing Humanity emerged as an indirect inspiration for shaping third-party relationships. Team collaboration and a holistic and collective approach to growth are defined as ways to advance humanity. This perspective has played a profound role in the firm’s values. It also emerges in the culture dimension as “a changing culture that involves everyone in the organisation.” The MTP is “a guide for our colleagues... for making this change effective.”

Figure 3. CBIM of Mylia.



Source: Authors’ elaboration

Research limitations.

Limitations are specific to each case study and related to the entire research.

First, the study is focused on two organisations only. While exploring this new topic is already useful, it should be considered a step towards a broader and more structured approach. As a second aspect, the two cases have been identified as representative of different industries. However, applying the same approach and extending the reach to two or more firms per industry would give us a valuable, broader perspective and include additional theoretical and managerial contributions. A third point is related to the study's industry coverage. Considering that only two sectors have been approached, it would be interesting to extend the study to a more significant number, for example, according to the digital vortex research (Wade et al., 2021). Fourth, every case study was designed to describe each organisation in a specific period, as identified in previous studies about the brand core (Urde, 2016). It would be interesting to study the ExOs with a longitudinal observation and the management of the MTP over time. A fifth point concerns the number of executives engaged in the research. In the case of Mylia, the number of managers interviewed could be significant, but the Airbnb case featured only two managers. Although they cover a relevant role in the organisation, this can be a limitation, considering the number of stakeholder groups involved in an ExO ecosystem. For this reason, a more inclusive study involving more internal and external perspectives should be undertaken in the future. Sixth, some limitations can be identified in the data types. All primary data have been collected through interviews. Due to restrictions related to COVID-19, some planned sessions for data collection through observations have been cancelled. Taking into account the importance of data diversity when it comes to qualitative research (Bryman, 2016; Yin, 2017), including the ones from observations, it would be valuable to extend the research with more data variety. Finally, a seventh point involves the nature of the work, supported by an inductive method. In the future, it would be interesting to extend the research following a different methodology, such as deductive (Bryman, 2016) or even abductive (Dubois & Gadde, 2002). This methodology, in particular, has already been applied to previous research about corporate brand identity (Urde & Greysen, 2016).

Lastly, when it comes to the definition of further studies, it could be interesting to extend the research to the different ExO attributes as dimensions of the impact of the MTP. The study has revealed that the CBIM cannot fully explain an Exponential Organization's identity. According to the existing literature on Corporate Brand Identity (Balmer, 2001, 2010), exponential attributes like Leveraged Assets or Staff on Demand should be analysed to understand their role as distinctive components of an ExO. It could lead to new considerations about the firm's corporate brand identity and relative dynamics.

Managerial implications. *First, this study contributes to creating systematic knowledge of ExOs, particularly the MTP. ExO scholars have clearly defined this need (Pompa, 2019; Marchese et al., 2020; Dimitrov, 2022). Also, this work is a step forward in validating the MTP concept, addressing the gap between academics and practitioners, as Bansal et al. (2012) described. The MTP emerges as a vital intangible asset within an ExO. Integral to the brand's core, it establishes identity and offers a clear sense of direction, inspiring and challenging the organisation. Simultaneously, the MTP exerts influence across various dimensions: shaping the firm's culture and internal operations, defining the brand and its external engagements, and informing the ExO's competitive strategy.*

Another significant finding from our study corroborates Ismail et al. (2014)'s assertion that the MTP is a fundamental prerequisite for an organisation to qualify as an ExO. According to Ismail et al. (2018), the MTP “defines the core purpose of the organisation's existence”, elucidating the company's aspirations. Therefore, the MTP must possess specific characteristics: it should address abundance, inspire transformation, and articulate the organisational purpose (Ismail et al., 2014). This is evident from our analysis of case studies. Both statements, such as Airbnb's “Belong Anywhere” (Chesky, 2014) and Mylia's “Advancing Humanity”, exhibit characteristics of being both Massive and Transformative.

The findings further indicate that the MTP constitutes a component of an ExO's brand core, as per Urde's model (2016). Our research illustrates that the MTP influences the brand's Promise and Core Values, which define the brand's essence, as outlined by Urde (2013). Therefore, the MTP is pivotal in shaping an ExO's corporate brand identity.

In conclusion, our study, employing the CBIM, has shed light on the significant role of the MTP in the value-creation process of ExOs. It becomes evident that coherence and alignment across various dimensions enable firms to effectively manage their corporate brand identity through the brand core, particularly in navigating diverse business challenges (Urde, 2013). Developing a specific value proposition for an ExO necessitates alignment with the brand promise, the brand core, and, consequently, the MTP. Scholars argue that this alignment is crucial for building reputation and fostering positive customer relationships, ultimately leading to revenue generation. Our research underscores corporate brand identity as a formidable management challenge (Urde, 2013). Furthermore, this aspect is highlighted by applying the competition diagonal, which delineates the managerial dynamic concerning how a firm operates in the market, employing differentiation based on market positioning and the organisation's competencies.

Originality of the paper. *This research aims to elucidate the concept of the MTP, a relatively novel topic in academia (Dimitrov, 2022). Similarly, ExOs, defined as companies implementing a digital business model and technologies, is perceived as a new study area (Pompa, 2021). However, they are relevant to contemporary managerial challenges (Marchese et al., 2020). Consequently, there is a pressing need for dedicated and innovative research efforts in this domain (Pompa, 2019). Moreover, considering Ismail's projection that all businesses will evolve into ExOs within the next decade (Derchi, 2021), the urgency to explore innovative methodologies to study this phenomenon becomes even more apparent (Pompa, 2019).*

In this context, there is a pressing need to develop innovative approaches for studying digital companies, particularly

ExOs, and recognise the practitioner-centric nature of the subject matter. Moreover, delving into the concept of purpose and its ramifications on corporate brand identity unveils potential new pathways for digital company leaders to foster increased mindfulness in their decision-making processes and amplify the effectiveness of their actions.

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Data Value Chain and Data Ecosystem through digital and traditional tools

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Abstract

The adoption of technologies based on data utilization and exploitation have led organizations to embrace new method of gathering information and insights. As data gain value throughout their journey from acquisition to usage, organizations must acknowledge each step of the Data Value Chain (DVC). This model, which forms the core of data ecosystem concept, helps organizations to fully unfold the potential of their data. Despite ecosystems literature have progressively gained importance, there is no common agreement on data ecosystem definition and terminology. Moreover, important core concepts such as relationships, roles, resources, or domain of data ecosystem may lack the required depth. The aim of this paper is to deepen our comprehension of the main characteristics of data ecosystems by focusing on their main component: the data value chain. We selected this unique contest since the national park is an attractive setting where digital and non-digital coexist. Indeed, this is an interesting phenomenon as this context shapes a data value chain fuelled by data coming from both traditional tools and advanced digital tool such as IoTs. By relying on the data value chain framework, this paper analyses how the National Park of Abruzzo, Lazio, and Molise managed the configuration of their data ecosystem. We developed the case study through content analysis of open-ended interviews and documental analysis. By analyzing the ecosystem at the micro level, we unpacked the data value chain examining interactions and technologies involved in each phase. We discuss the importance of both face-to-face and digitally mediated interactions along the data value chain. In addition, we found how technologies are implemented in each phase of the value chain and discussed about implications. We contribute to literature by deepening our understanding of concepts that organizations must configure while managing or participating in an ecosystem.

Key words: data ecosystem, data value chain, innovation, knowledge, communication tools, team.

Framing of the research. *The ongoing spread and development of technologies are opening up new opportunities for organizations to collaborate, share resources, and operate in an increasing interconnected business environment (Dosi, 1982; Kapoor & Teece, 2021). The adoption of technologies based on data as strategic assets drives organizations into transformations, which may involve digitisations of traditional systems, change in management strategies or in decision making processes (Brynjolfsson & McElheran, 2016; Curry, 2016; Curry & Ojo, 2020; O. D. Watch, 2017). Data are increasingly rising in importance since organizations continuously acquire and exploit them from their context (Alaimo & Kallinikos, 2021). However, these advantages are obviously not immediate. In order to extract value from data, organizations must integrate and model them through specific phases that are described by data value chain framework. The data value chain highlights the activities related to data and technologies allowing organizations to catch value from their owned or acquired data (De Simone et al., 2023; O. Watch, 2017). The data value chain is a model that illustrates how the flow of information create value across a series of step: acquisition, analysis, curation, storage, usage (Curry, 2016). It describes the trajectory data taken from the acquisition to the usage (Curry, 2016; O. D. Watch, 2017). Data value chain has its roots in Porter's value chain (1985), a decision support model for those activities that organisations perform to deliver products or services to markets (Porter, 1985). Today, it is considered as a pivotal point of the future knowledge economy thanks to the opportunities it offers for the digital development of economic sectors (DG Connect, 2013). The huge amount of data is not only owned, but also produced, shared, consumed, and reused from various domains. The data value chain has been developed to analyse the activities related to data and technologies within organisational setting and it is placed to the core level of a data ecosystem (Curry, 2016; De Simone et al., 2023). While referring to data, the term ecosystem refers to a set of actors that generate and share data while interacting with each other (De Simone et al., 2023). This consideration of data as a commodity has led to the emergence of a new environment called data ecosystem (Oliveira et al., 2019; Oliveira & Lóscio, 2018). In this context, the term ecosystem relates to a set of actors that generate and share data while interacting with each other (De Simone et al., 2023).*

Since Moore (1993) explored ecosystems in business strategies, the concept gained increasing importance in the academic literature. It is widely accepted that organisations participating the ecosystems can create more value than they

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would have by acting alone: they can foster innovation and they can achieve a position of competitive advantage (Adner & Kapoor, 2010, 2016; Cennamo & Santalo, 2018; Jacobides et al., 2018). Organizations become dependent on each other following their mutual benefit provided by the resources they are exchanging (Cavanillas et al., 2016). Curry et al. (2020, p. 20) described data ecosystem as follow: “a sociotechnical system enabling value to be extracted from data value chains supported by interacting organizations and individuals”. According to (Oliveira et al., 2019) the data ecosystem is a complex network formed by interacting actors that collaborate to find, share, or use data to foster innovation, create value, and support new businesses. Consequently, data ecosystems are composed by different relationships in a network of multiple actors that engage data sharing to contribute to a common purpose or value proposition. Thanks to this network, actors extract value from data value chains (Curry et al., 2022) and therefore they can create new value that no single participant can create (Cavanillas et al., 2016). Within data ecosystems, actors can be organizations or individuals taking part and assuming different roles. Key actors include data suppliers and consumers, data and technology providers, marketplace, and end users (Curry et al., 2022).

After its emergence, the ecosystem is supported by continuous interactions among actors who are engaged in data sharing activities. This could lead the ecosystem to a position of advantage within its sector or market (Blijleven et al., 2013). This stage is characterized by significant changes. Academic literature describes these dynamics as adjustments occurring from the inside or influences exerted from outside the ecosystem (Daymond et al., 2023). According to Holgersson et al. (2022) technological innovations and new style of management are two important drivers in ecosystem. Technological innovations ‘enable or are enabled’ ecosystems’ (Holgersson et al., 2022, p. 2). This implies that a new technology can profoundly influence the entire ecosystem. It may cause it to contract, expand, or undergo broader evolution or collapse. According to the authors, new style of management could impact the ecosystem in terms of coordination costs, level of collaborations, and further innovation. These two drivers model the interconnections and the design of the ecosystem (Holgersson et al., 2022b; Kapoor, 2018). As a consequence, interconnections between actors is ensured by the configuration of technologies and the role assumed by actors. As they can assume various roles with different functions, the ecosystem may be orchestrated by a keystone actor (who define and shape the trajectory of the ecosystem) or it could present a distributed configuration between members (Gawer, 2022; Kapoor & Klueter, 2021).

Based on interconnections and the roles of participants, these actors can develop a wide variety of different relationships and levels (Cavanillas et al., 2016; Curry, 2016). Accordingly, ecosystem literature considers three level of ecosystem: core value chain, extended value chain, and big data ecosystem (Cavanillas et al., 2016; Curry, 2016; Curry & Ojo, 2020). The core value chain represents the central element of a data ecosystem. It categorizes the value-adding activities of organizations, allowing them to extract value from their data. The core value chain models the interconnection between direct data suppliers and the data value distribution channels. (De Simone et al., 2023). The second level of the framework is the extended value chain. At this level actors have the potential to influence market dynamics. They are data and technology providers, data marketplace, and data end users (De Simone et al., 2023). Finally, the macro level of the framework is formed by the big data ecosystem. It is a data environment ‘supported by a community of interacting organisations and individuals’ (Curry, 2016, p. 5). According to the author, the big data ecosystems can surround organisations, technology platforms, or entire sectors.

Purpose of the paper. Despite ecosystems literature have progressively gained importance since Moore’s work (1993), our understanding of data ecosystem concept can be deepened (Oliveira et al., 2019). For example, there is no common agreement on data ecosystem terminology. Oliveira et al. (2019) highlighted the non-existence of a commonly accepted definition. In addition, several works often omit or only address the surface of important core concepts such as relationships, roles, resources, or domain of data ecosystems (Åkerman et al., 2018; Gelhaar et al., 2021; Oliveira et al., 2019). In his review, Heinz (Heinz et al., 2022) found a high degree of fragmentation and suggested the need for improving structural clarity of future research. Following, our research question: how do organizations configure the data value chain in a context where digital and non-digital coexist?

Thereby, the aim of this paper is to define and deepen our comprehension of the main characteristics of a data ecosystem by focusing on the core component of the ecosystem: the data value chain. By delving into the data value chain, at the micro level of the ecosystem (Curry, 2016), we have taken into analysis a singular data ecosystem characterized by actors interconnected by different interactions and with (or without) various types of technologies. By unpacking the data value chain, our purpose is to identify the most frequent interactions and the most used tools in each step of the value chain (data acquisition, data analysis, data curation, data storage, and data usage). This examination allows us to understand how actors within ecosystems behave in a complex context, how they interact and collaborate where digital and non-digital elements coexist.

Methodology. To address our aim, we studied a complex data ecosystem comprised of different kinds of interactions: face-to-face and digitally mediated, involving various tools, both technological and traditional. We conducted a qualitative investigation of data and information sharing mechanisms within the National Park of Abruzzo, Lazio and Molise. The Park manages the complex wildlife of central Italy through dedicated efforts and numerous activities, continuously supported by modernization initiatives. Today PNALM is sustained by network of strong personal relationships and communication, fuelled by continuous face-to-face interactions. Additionally, a well-established use of communication tools and ICT regularly supports their activities, such as data collection, data sharing, storage, analysis, and, more generally, information exchange of various typologies. In other words, their network is composed by a huge flow of information sharing within the organisation, occurring through different tools. To ensure the safeguarding of the natural environment and wildlife numerous organizational areas are engaged in activities. These activities include surveillance, data collection as well as other tasks such as geolocalisation, genetic material collection, drafting of

sightings cards. They are all supported by the use of technologies such as radio collars, app, database, and other ITC.

The national park is an attractive setting in which members perform their activities in a context where digital and non-digital coexist. This is interesting since our context shapes the data value chain fuelled by data coming from both traditional tools and advanced digital tool such as IoTs. Moreover, the park is involved in a continuous modernization of its processes and initiatives, adopting and testing new technologies. This innovation process makes it visible our phenomenon of interest. It could be directly observed as it provides high visibility of the types of interactions and the technologies supporting the data ecosystem.

We conducted a documental analysis about information such as the organization's initiatives and collaboration, the involved actors, their activities, adopted technologies, the organizational structure, their future projects, and events. After conducting the analysis, we collected primary data with 16 open-ended interviews. The questionnaire was focused on monitoring activities, technologies, personal relationships, data sharing, external collaborations, and final questions. We interviewed multiple actors within PNALM belonging to different organization's sectors: direction, scientific sector, communication sector, rangers, and a tech company providing IoT technologies. The first interview lasted 2 hours and the subsequent approximately 1 hour. All the interviews conducted have been recorded, transcribed, and coded in order to identify all the relevant topics and develop the case study. Thereafter, we analysed the interviews with content analysis method. It involved three phases: the pre-coding phase has been carried out starting from the development of a dictionary structured with the most relevant concept found. This was a preliminary analysis where we highlighted the most frequent keywords from the interviews looking for relations with the literature (Creswell, 2014). In the coding phase, we deeply analysed the interviews, selected parts of the text, and assigned them to nodes. The selected nodes have been split into sub-nodes based on the contents. 10 variables were identified following the organizational literature and coded into nodes using NVivo software. We based our methodological approach following (Gioia et al., 2013). In order to assign the type of interactions and tools to the correct phase of the value chain, we assigned the identified nodes to the corresponding phase of the value chain. For example, PNALM's activities, such as wildlife geolocalisation, genetic material collection, and drafting sightings cards, are clearly associated with the first phase of the value chain: data acquisition. We applied the same logic for the other phases.

Results. Firstly, this paper analyzed the types of interactions that support the interconnections along all the steps of the data value chain. We found that each step is characterized by a different occurrence of face-to-face and digitally based interactions. Major occurrences of face-to-face interactions were observed during data acquisition and data usage. This means that actors tend to work and collaborate together live, mostly sharing data or information face-to-face in this phase. In contrast, data analysis and curation bring a slight improvement in the use of digital technologies. Subsequently, in data storage phase there has been a good balance between the two types of actor interactions. Indeed, we found that data travel more through ICTs in order to be stored in the database. The exception is mainly represented by the ongoing use of paper sheets. In the data usage phase, we observed a predominance of face-to-face interactions within the organization. The main reasons why traditional means are still used may include: lack of enabling technologies in some areas (for example, where internet connectivity is unavailable or has a limited signal). Additionally, critical issues encountered in the development of a dedicated platform contributed to this reliance on traditional methods.

Secondly, we focused on the typology of the tools used for each phase of the value chain. We found a different use of digital and traditional tools for each step of the value chain. While digital tools such as IoTs or GPS-based technologies are used for data collection activities, the other phases are characterized by a major use of database and analysis software. Turning to traditional tools, we found paper sheets to be the most commonly used tool in our research context. Finally, we identified the types of activities performed by the actors of each step of the value chain. These findings are part of the attempts to construct a link between knowledge management and data value chain.

Research limitations. As this paper is based on a single case study, it may limit the boundary of findings generalizations. This methodology could be replicated to guarantee improved results by multiplying the patterns found, ensuring the enhancement of robustness of the findings (Yin, 2003). In addition, we focused our study on a unique context where digital and non-digital coexist. Thus, further research may be replicated in other contexts with different configurations of ecosystem components or resources. There may be contexts where other technologies have been adopted or where different styles of management are employed. Moreover, in our setting, the core of the ecosystem is completely internal to our organization. Other research may expand our model by selecting an interorganizational's value chain. For example, a decentralized configuration might be studied thanks to external collaboration.

Managerial implications. Thanks to our research, organizations could know how to improve and manage the ecosystem they are involved in. By knowing how they are structured, organizations can exploit the potential advantages of adopting the right configuration of interactions and tools. In addition, they can perform their activities in a manner that ensures data to be managed throughout the entire data value chain. Organizations can anticipate and avoid criticalities such as lack of enabling technologies, communication, and information losses.

This study highlights the significance of both face-to-face and digitally based interactions along all phases of the value chain. Organizations can facilitate the data sharing process and the exploitation of the value that could emerge from it. They must implement the right strategies and configurations in order to ensure a continuous flow of interactions within the ecosystem.

Regarding to technologies, since each phase is characterized by the use of specific tools, organizations can adapt their technological configuration following the value chain. They can foster the adoption of the right technologies for the

right phase of the value chain. For example, we found major problems in data collection step. Organizations may solve the problems emerging in the development of their platform by enhancing collaborations with the app developer. Finally, organizations may consider the development of a centralized database along the value chain to avoid information losses and to allow all the members to have access to data at the right moment they need them.

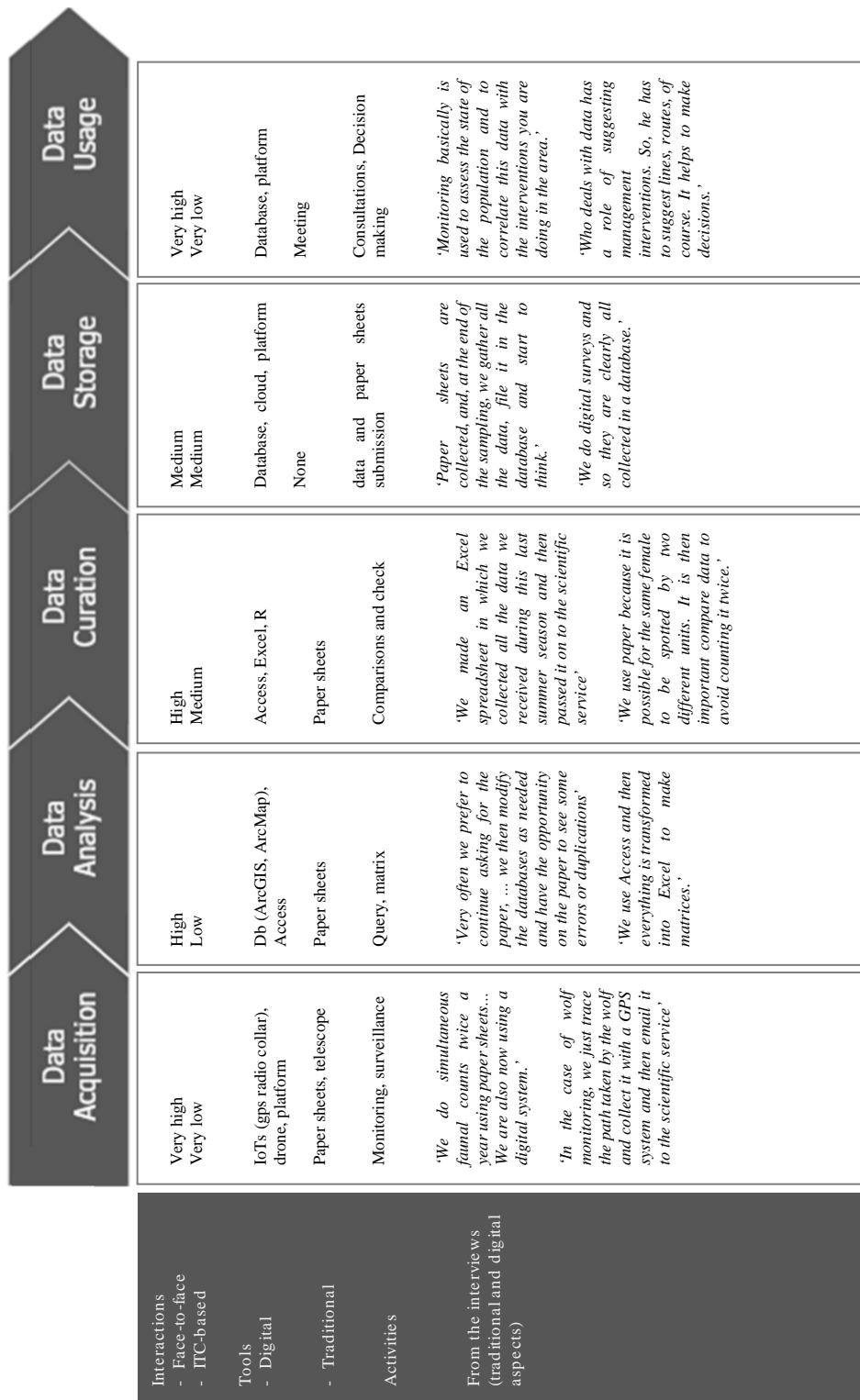


Figure 1 - Data Value Chain from Curry, (Curry, 2016)
Scale: very low, low, medium, high, very high

Originality of the paper. Data value chain and data ecosystem are two fairly novel topics that are still under explored in academic literature. Our investigation highlights the types of interactions and the technology adopted along the value chain modeled in our context. This study found several challenges and criticalities in the configuration of an ecosystem characterized by both digital and traditional tools. By acknowledge our findings, organizations could take advantages while modeling their value chain, in terms of technology adoption, human resources organizations, and decision-making processes.

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Web 3.0: il punto di vista dei manager sulle opportunità e le sfide del Metaverso e degli NFT

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Abstract

Lo studio esamina il punto di vista dei manager rispetto alle opportunità e alle sfide derivanti dall'adozione delle tecnologie del Web 3.0, con particolare riguardo al metaverso e agli NFT. Lo studio adotta un approccio mixed and method su un panel di 100 manager PMI e grandi imprese operanti in Italia e rappresentative di oltre 20 settori, sia nell'industria che nei servizi. Dal lavoro emerge che i manager considerano il metaverso e gli NFT come tecnologie che trovano numerose applicazioni di business e che sono da esplorare in quanto capaci di essere una risorsa distintiva per le imprese e una fonte di innovazione per la generazione di nuovo valore intangibile di mercato. Lo studio evidenzia inoltre le principali sfide che sono legate all'adozione di tali tecnologie e che attengono al know-how, alle risorse e alla sicurezza.

Keyword: web 3.0, metaverse, NFT, innovation, strategy, manager behavior, CEO.

Introduzione e obiettivi della ricerca. *Il Web 3.0 rappresenta un ambiente caratterizzato dalla integrazione di tecnologie basate sui Distributed Ledger, come blockchain, che consentono comunicazioni dirette e sicure tra utenti, l'archiviazione decentralizzata dei dati e la creazione di reti peer-to-peer (Garnett, 2024).*

Il Web 3.0 possiede la capacità di amplificare l'esperienza degli utenti perché consente di vivere mondi virtuali aumentati, di creare alti livelli di coinvolgimento e di immersività, e di scambiare oggetti digitali attraverso i sistemi blockchain. L'adozione delle tecnologie del Web 3.0 ha subito un'accelerazione durante il periodo della pandemia da COVID-19 che si deve alla accresciuta integrazione delle tecnologie digitali negli spazi di vita e di consumo delle persone (Sheth, 2020).

Le caratteristiche delle tecnologie del Web 3.0 anticipano come queste potranno generare profondi cambiamenti nelle modalità di gestione dei processi di innovazione da parte delle imprese (Acciarini et al., 2023; Lumineau et al., 2021; Tapscott and Tapscott, 2017). Tra queste, emerge la rilevanza del metaverso come sistema esperienziale di continuità tra il mondo reale e quello virtuale (Floridi, 2022; Hennig-Thurau et al., 2022). Si stima che nel 2024 saranno venduti oltre 14,3 milioni di dispositivi per la realtà virtuale al livello globale e che il fatturato globale del mercato del metaverso raggiungerà i 678,80 miliardi di dollari nel 2030, fino a sostituire gli attuali social media (Statista, 2023).

Nell'ambito del Web 3.0, rilevanti sono anche i Non Fungible Tokens (NFT), i quali si stanno affermando come game changer in numerosi settori. Infatti, a fine 2022 risultano essere stati scambiati oltre 9 milioni di NFT a livello mondiale, per un valore di quasi 2 miliardi di dollari (Cryptonomist, 2023).

Sebbene si stia assistendo ad una crescita della rilevanza di business delle tecnologie del Web 3.0, e che si deve alla loro capacità di incidere sui sistemi di generazione del valore delle imprese e di agire come motori di sull'evoluzione futura delle industrie (Kraus et al., 2022), tuttavia gli studi sul tecnologie del Web 3.0, ed in particolare su NFT e metaverso, sono ancora limitati ed hanno una prevalente natura teorica. E' riconoscendo questo gap che il presente studio mira ad approfondire la comprensione circa gli impatti di business del metaverso e degli NFT, cogliendo il punto di osservazione dei manager che hanno adottato o che adotteranno in futuro questa tecnologia.

Lo studio intende non solo aggiungere nuova conoscenza teorica circa il fenomeno del Web 3.0 e sui suoi impatti di business, ma anche fornire una visione d'insieme circa le principali opportunità e sfide che sono legate all'adozione di tali tecnologie, al fine di guidare le aziende che ancora non le hanno adottate verso la loro integrazione nei propri modelli organizzativi.

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Background teorico

La rilevanza manageriale del metaverso

Il metaverso rappresenta una rete di mondi virtuali 3D e immersivi in cui le persone interagiscono come avatar tra loro e con l'ambiente, come nel reale ma senza alcuna limitazione fisica (Giang Barrera and Shah, 2023). Il termine metaverso è stato utilizzato per la prima volta nel romanzo Show Crash di Neal Stephenson per descrivere il mondo virtuale dell'era del post internet (Lee et al., 2022).

Il termine ha tuttavia acquisito accresciuta rilevanza in corrispondenza con l'annuncio nel 2021 da parte di Facebook del coinvolgimento in questa tecnologia, con la sua trasformazione in Meta (Kraus et al., 2022; Polyviou and Pappas, 2022). Il metaverso non è un'idea nuova, trova infatti i suoi fondamenti nei mondi virtuali del Web 2.0 che negli 2000 hanno consentito agli utenti di sperimentare mondi virtuali (es. Second Life) ed interagire con i loro avatar (Dwivedi et al., 2022; Park and Kim, 2022).

Tuttavia, il metaverso presenta delle caratteristiche peculiari che lo distinguono dalle esperienze precedenti e che sono l'essere un business scalabile (Dwivedi et al., 2022), avere una infrastruttura fisica basata su tecnologia blockchain che abilita la possibilità di produrre e scambiare prodotti digitali, essere caratterizzato dalla possibilità di integrare numerose tecnologie digitali 4.0, come la realtà virtuale (VR), la realtà aumentata (AR), la realtà mista (MR), il 3D e le tecnologie di computer vision unitamente ai sistemi di connettività avanzati (Ali et al., 2023; Giang Barrera and Shah, 2023). Questo consente di arricchire l'ambiente digitale di contenuti coinvolgenti, e raggiungere elevati livelli di immersione (Park and Kim, 2022) di presenza fisica nel virtuale e di interazione sociale (Dionisio et al., 2013; Giang Barrera and Shah, 2023; Hennig-Thurau et al., 2022)

Questi aspetti di rottura rispetto alle tecnologie solo virtuali consentono di vedere il metaverso come una applicazione tecnologica in grado di rivoluzionare le modalità di relazione di mercato in diversi settori (Dwivedi et al., 2022; Hollensen et al., 2022; Park and Kim, 2022) come l'intrattenimento (es. le piattaforme Roblox, Sandbox e Decentraland), il retail e la moda dove il metaverso trova numerose applicazioni come vetrina e spazio di consumo e promozionale per accrescere l'esperienza dei consumatori con i brand (Joy et al., 2022), oltre all'education (Lee et al., 2022) e al turismo (Gursoy et al., 2022).

La rilevanza manageriale degli NFT

Gli NFT (Non Fungible Token) vengono definiti come beni digitali che sono stati autenticati utilizzando la tecnologia blockchain (Zelazsko, 2024). Gli NFT permettono quindi di generare "gemelli digitali" di prodotti fisici con un corredo di informazioni identificative delle transazioni che sono avvenute sin dalla loro creazione su tecnologia blockchain (Colicev, 2022). Ciò consente di aggiungere distintività ai prodotti fisici (Hofstetter et al., 2022) rafforzandone il valore simbolico (Colicev, 2022), ma anche di creare asset interamente digitali che si aggiungono al portafoglio di prodotti fisici delle imprese (Hakkarainen and Colicev, 2023). Si tratta di una possibilità di innovazione che le imprese, soprattutto nel segmento del lusso, stanno già esplorando (ad esempio le collezioni Bulgari o Gucci).

Nel settore del collezionismo, gli NFT hanno conosciuto una decisa espansione a livello mondiale a partire dal 2021 (Nadini et al., 2021) e trovano oggi numerose applicazioni anche nelle industrie creative e dello sport (Wilson et al., 2022), nel settore degli eventi e del turismo (Zhang, 2022). Nel settore del fashion, le imprese hanno iniziato ad integrare gli NFT negli ambienti del metaverso (Joy et al., 2022) accrescendo il valore dei brand attraverso la creazione di community e la partecipazione a eventi esclusivi (Zhang, 2022). Gli NFT trovano anche applicazione nei servizi medici e della finanza (Ali et al., 2023), ma anche nei sistemi di tracciamento dei prodotti lungo tutta la value chain e come strumento di rafforzamento della proprietà intellettuale (Treiblmaier and Sillaber, 2021).

Dai contributi di letteratura manageriale emerge come gli NFT rappresentino degli abilitatori di valore di mercato, aprendo le imprese a nuove modalità di creazione e vendita dei prodotti (Zhang, 2022) modificando l'infrastruttura che presiede alle transazioni e alla determinazione dei prezzi (Dowling, 2022) creando nuove relazioni con gli stakeholder e di mercato (Nadini et al., 2021; Wilson et al., 2022).

Inoltre, facendo leva sui sistemi di decentralizzazione abilitati da blockchain, gli NFT mostrano anche la capacità di trasformare i modelli di mercato tradizionali a vantaggio di nuovi formule disintermediate, o reintermediate da attori digitali (Hofstetter et al., 2022).

Nonostante le potenzialità della tecnologia di riconfigurare i mercati esistenti e di crearne di nuovi (Wilson et al., 2022), tuttavia gli NFT rappresentano ancora una tecnologia in fase nascente, e numerose sono le incertezze legate alla loro adozione, tra cui il livello di sviluppo della tecnologia e la sua interoperabilità, oltre a fattori legati alla sua sicurezza (Giang Barrera and Shah, 2023)

Dall'analisi della letteratura manageriale, emerge che gli studi su NFT e metaverso sono ancora limitati e mancano soprattutto contributi che approfondiscano il punto di vista dei manager rispetto all'adozione delle due tecnologie.

Il Disegno di ricerca. *In coerenza con gli obiettivi del lavoro, volto ad approfondire il punto di vista manageriale sul metaverso e sugli NFT, è stato scelto un approccio mixed and method quali-quantitativo all'indagine, mediante la somministrazione di una survey a domande chiuse ed aperte che ha coinvolto un panel di 103 manager rappresentativi di oltre 20 diversi settori, e appartenenti a PMI e grandi imprese.*

La survey è stata svolta in Italia e ha coinvolto sia manager che hanno adottato, sia coloro che non hanno ancora adottato le tecnologie oggetto di indagine.

Nelle domande aperte è stato richiesto ai partecipanti di condividere i vantaggi e le sfide legate rispettivamente al metaverso e agli NFT. Le risposte aperte sono state analizzate attraverso modelli di analisi testuale software assistiti

mediante il programma T-LAB Plus (versione 10.1.2). Sono state effettuate analisi di parole chiave, di co-occorrenza e di associazione di parole, considerando come parole centrali gli “NFT” e il “metaverso”. I risultati sono stati rappresentati in forma di ego-network, dove la grandezza del cerchio mostra il maggiore numero occorrenze di lemmi di parole nel testo, mentre la dimensione del collegamento indica la maggiore vicinanza tra la parola chiave centrale e quella posta nel raggio del radiale. Attraverso le domande chiuse del questionario sono state analizzate le principali ragioni per cui le aziende dovrebbero investire nel metaverso e negli NFT. Le risposte quantitative sono state elaborate statisticamente utilizzando Stata (versione 17) e sono state rappresentate sottoforma di statistiche descrittive.

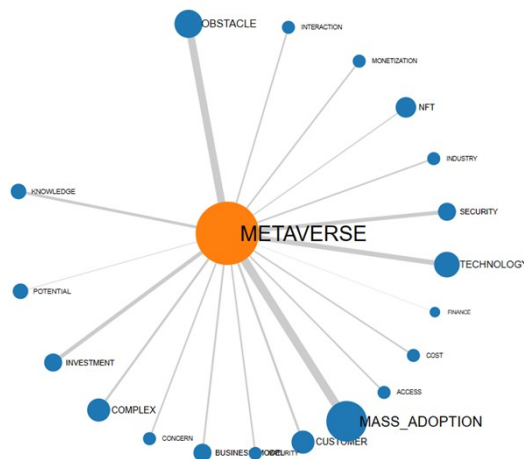
Analisi dei risultati

Risultati qualitativi

Una prima analisi dei risultati qualitativi sulle parole chiave all'interno del corpus, permette di evidenziare che queste sono, oltre a “Metaverse” (N=44) e “NFT” (N=24), anche “Mass adoption” (N=16), “Obstacle” (N=12) e “Business Model” (N=10).

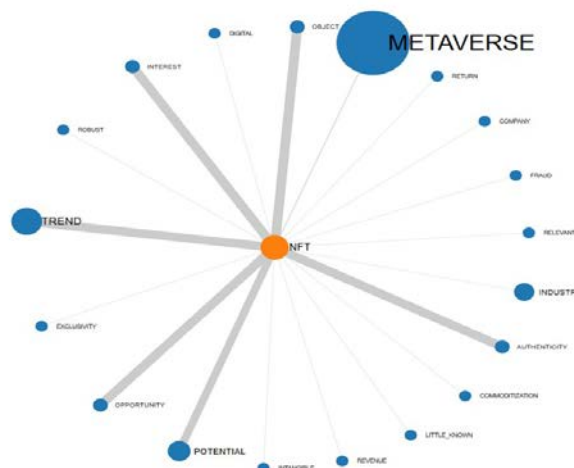
L'ego-network relativo alla parola chiave “metaverso” mostra che il termine è associato con maggiore forza ai termini “mass adoption”, “obstacle”, “technology”, “security” e “investment”. Questi risultati sottolineano la rilevanza degli aspetti che sono ritenuti più critici per i manager

Figura 1. Ego-network per termine “metaverse”



Dall'analisi delle co-occorrenze relative agli “NFT” nel corpus si evince che il termine “NFT” è stato associato più spesso ai termini “trend”, “interest”, “opportunity”, “potential” e “object”. Questo rileva che per il metaverso il panel rileva non soltanto termini che attengono alle criticità della tecnologia ma anche aspetti che ne mettono in risalto i vantaggi di mercato.

Figura 2. Ego-network per termine “NFT”



Inoltre i risultati dell'analisi delle risposte relative alle sfide del metaverso fa emergere la priorità assegnata al lemma "conoscenza", seguita dal lemma "sicurezza". La figura 3 mostra la nuvola di parole relative alle sfide del metaverso.

Figura 3. Word cloud relativo alle risposte sulle sfide del Metaverso e NF



Risultati quantitativi

Per quanto attiene ai primi risultati quantitativi, riguardo al metaverso, circa un terzo dei rispondenti ha già sperimentato il metaverso, e un quarto ha intenzione di farlo in futuro, mentre meno della metà non lo ha ancora sperimentato. Inoltre, emerge un maggiore interesse verso l'adozione della tecnologia del metaverso in alcune aree chiave, quali il marketing, la R&S, e i processi di produzione.

I risultati dell'indagine mostrano anche oltre i due quarti dei manager che hanno pianificato lo sviluppo di nuove soluzioni nel metaverso ritengono di voler investire nell'accrescimento delle skills dei dipendenti rispetto a questa tecnologia, individuando anche le competenze interne che saranno necessarie alle imprese per avviare progetti nel metaverso.

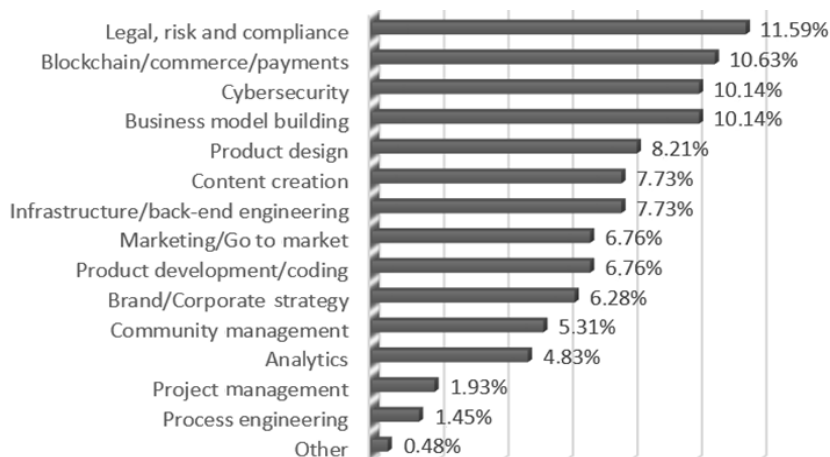
Riguardo alla propensione all'investimento dei manager, il 42% degli intervistati ha dichiarato che investirà sicuramente o probabilmente in soluzioni per il metaverso, mentre il 43% è indeciso e solo il 15% non intende investire. Oltre il 40% degli intervistati ritiene inoltre che il tasso di crescita medio del mercato del metaverso, in termini di ricavi previsti nei prossimi 10 anni, sarà superiore al 40%. Tuttavia, l'80% dei manager/CEO non prevede di investire più del 5% del proprio budget disponibile in progetti di metaverso nel medio termine.

Tra coloro che intendono investire nel metaverso, le principali aree di applicazione in cui si concentrerebbero sono: a) creazione di esperienze immersive per i propri clienti; b) attività di formazione; c) campagne o iniziative di marketing; e d) riunioni aziendali virtuali.

Inoltre, i settori che, secondo gli intervistati, saranno maggiormente interessati dal fenomeno del metaverso sono a) l'istruzione e formazione, b) l'intrattenimento, c) i media e notizie, d) il commercio al dettaglio, e) la produzione avanzata.

Sotto il profilo delle criticità, i manager si soffermano sull'incertezza del ROI degli investimenti di metaverso e quindi sulle reali potenzialità di mercato del metaverso. Un altro aspetto rilevante è la mancanza di competenze specifiche e i problemi di sicurezza relativi alla gestione dei dati (fig. 4).

Figura 4. competenze che i manager ritengono necessarie per la realizzazione di una strategia relativa al metaverso.



Per quanto riguarda gli NFT, il 46% degli intervistati ritiene rappresentino un trend da esplorare. Inoltre, le principali aree che i manager vedono di maggior sviluppo per gli NFT sono la tutela intellettuale, il collezionismo, e il marketing.

Secondo i manager del panel, sebbene si tratti di un mercato di nicchia, gli NFT rappresentano una significativa opportunità di crescita dei ricavi e hanno già dimostrato di avere un potenziale di sviluppo in diversi settori. Inoltre il loro valore potrebbe aumentare in seguito ad una loro adozione mainstream. Tuttavia, circa i 2/5 degli intervistati non considerano i NFT una tecnologia esplorare e su cui investire, poiché il mercato è ancora troppo volatile e quindi il loro valore di business si mostra ancora limitato.

Per quanto riguarda gli aspetti normativi, solo il 17% degli intervistati ritiene che i governi stiano agendo in modo adeguato rispetto alla regolamentazione del metaverso, mentre il 63% ritiene che gli attuali livelli di regolamentazione non siano sufficienti. Secondo questi manager le aree che dovrebbero essere regolamentate nel campo del metaverso riguardano principalmente la sicurezza informatica, l'istruzione e la formazione, le transazioni economiche e la relativa tassazione, nonché il comportamento sociale ed etico per prevenire implicazioni psicosociali potenzialmente dannose.

Discussioni e conclusioni. *I risultati delle indagini qualitative e quantitative dello studio forniscono informazioni rilevanti rispetto al punto di vista dei manager sul metaverso e sulle NFT.*

Per quanto riguarda in particolare gli NFT, il bisogno di autenticità è visto come un driver chiave per l'adozione degli NFT. Questo suggerisce che gli NFT potrebbero innovare significativamente i modelli di business. Infatti, questa tecnologia può essere utilizzata per rafforzare gli asset intangibili di un'azienda, rendendo unica la sua offerta. Questo aspetto è particolarmente importante tenendo in considerazione una visione basata sulle risorse, secondo la quale l'unicità delle risorse delle aziende rappresenta un importante motore di creazione di valore (Barney et al., 2001). Pertanto, gli NFT consentono alle aziende di preservare i loro segni identificativi sul mercato, attraverso il rafforzamento del copyright, garantendo in tal modo la preservazione del loro valore interno.

I manager ritengono inoltre che sia il metaverso sia gli NFT rappresentino strumenti importanti per la creazione di valore per i clienti, attraverso strategie di differenziazione che fanno leva sulla creazione di oggetti digitali. Ciò potrebbe, a sua volta, migliorare le relazioni tra i consumatori e le marche, e generare impatti positivi sui ricavi dell'azienda.

Infine, l'analisi evidenzia le principali sfide che sono legate all'adozione delle due tecnologie, e che riguardano principalmente gli investimenti, la conoscenza, le competenze e la sicurezza.

Nonostante l'enorme potenziale, i manager hanno sottolineato la sfida relativa alla mancanza di conoscenza di questi due fenomeni e il fatto che non ne sono ancora chiare le modalità di utilizzo, e ciò potrebbe limitarne la crescita nei livelli di adozione.

I risultati mostrano anche che, sebbene i manager siano disposti a investire nel metaverso e nelle soluzioni NFT, essi ritengono anche che non siano ancora tecnologie mainstream, e questo ne rende incerti i ritorni futuri sugli investimenti. Questo suggerisce che gli investimenti futuri sulle due tecnologie saranno limitati fino a quando il fenomeno non si svilupperà su scala più ampia. È interessante inoltre notare che alcuni manager hanno sostenuto che essere early adopter in questo settore potrebbe essere rischioso, mentre i late adopter potrebbero avere il vantaggio di evitare gli errori che altri avranno già commesso.

Un altro aspetto rilevante che è legato alle sfide, riguarda la conoscenza della tecnologia stessa e la necessità di competenze di alto livello per sfruttare appieno il potenziale di queste due tecnologie. I manager considerano quindi il fattore umano come un driver nell'adozione delle due tecnologie emergenti, e questo implica assegnare rilevanza alla formazione delle risorse umane al fine di aumentare la capacità organizzativa di fare leva su questa tecnologia, sfruttandone tutte le opportunità di mercato.

Implicazioni teoriche e manageriali. *I risultati dello studio forniscono importanti contributi teorici che sono legati all'accrescimento della comprensione del Web 3.0, con particolare riguardo al metaverso e agli NFT. Lo studio permette di evidenziare come si tratti di tecnologie che si confermano come rilevanti per business e che sono in grado di riconfigurare i sistemi del valore delle imprese, di essere una risorsa per la creazione di un vantaggio competitivo che fa leva sulla generazione di valore di mercato intangibile, e di cui i manager, anche quelli che operano nelle PMI si mostrano consapevoli.*

Inoltre, il lavoro contribuisce alla letteratura emergente sul metaverso e sulle NFT, fornendo indicazioni su ciò che i manager pensano e intendono muoversi rispetto alla loro adozione, identificando le opportunità ma anche gli ostacoli considerati più rilevanti all'adozione di queste tecnologie.

Il lavoro fornisce inoltre ai decisori delle indicazioni rispetto alle iniziative prioritarie che dovrebbero essere adottate per accelerare la diffusione di queste tecnologie da parte delle imprese.

Lo studio presenta rilevanti implicazioni manageriali. Infatti, i risultati dimostrano che il metaverso e gli NFT sono tecnologie con un alto potenziale di creazione di valore per le imprese, e che le imprese stesse, anche le PMI non possono ignorare. Tuttavia, la loro adozione implica un deciso impegno da parte delle imprese in termini di investimenti in abilità e competenze che sono essenziali per lo sviluppo di progetti ottimali che coinvolgono queste tecnologie.

Infine, l'avvio di progetti di metaverso e NFT, richiederà alle imprese una chiara definizione degli obiettivi strategici legati all'adozione delle due tecnologie, e l'implementazione di approcci gradualmente che potranno anche prevedere la creazione di collaborazioni con partner tecnologici esterni chiave per superare le lacune in termini di competenze e abilità interne.

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Fostering high-impact innovation: empirical evidence in Europe

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Abstract

The present exploratory research paper delves into the dynamics between external and internal catalysts for innovation and their impact on the profundity of innovation within firms, integrating insights from the disruptive innovation and the resource-based view frameworks. On the one hand, the study examines market competitiveness as an external driver of innovation. On the other, it focuses on firm-level (internal) innovation drivers, particularly those related to patents. This investigation encompasses a large dataset of publicly listed European corporations over the period from 2013 to 2021. The findings indicate a positive relationship between the depth of innovation and certain innovation drivers. Nevertheless, an inverse relationship is identified between the patent's portfolio and innovation depth, suggesting that a small number of valuable patents, in comparison to the overall patent count, diminishes innovation depth. This paper proposes that future research should examine how the influence of these external and internal drivers on a firm's innovation depth varies across different sectors and explore the effect of moderating variables on the relationship studied. By offering a general view of the innovation drivers, this research enriches the existing academic literature with novel perspectives.

Keywords: *innovation drivers; innovation depth; intellectual property*

Framing of the paper. *It is widely recognized that intellectual property (IP) serves as a fundamental element for fostering innovation and attaining an advantage in the global marketplace (Coro and Burtchaell, 2021; OECD 2023). However, the rapid progression of Industry 4.0, the intricate relationship between market dynamics and the technical quality of IP becomes increasingly critical. Within this context, markets for technology not only addresses how technologies evolve and influence market dynamics but also how they are integrated into business models and marketing strategies to drive innovation and competitive advantage. Hoffman et al. (2021) emphasized the need for marketing scholars to develop theoretical paradigms that encapsulate how technologies foster competitive advantages, connecting technological innovation directly to marketing theory and practice. Mansour and Barandas (2017) contribute to the discussion by focusing on high-tech entrepreneurial content marketing and its role in business model innovation. Their study illustrates how high-tech entrepreneurs leverage innovative marketing strategies under limited resources and unpredictable conditions, underlining the connection between technology, marketing, and business model innovation. In their research on the transformative effects of marketing innovation on the competitiveness of businesses, Ungerman, Dědková, and Gurinová (2018) affirmed that the significance of innovative solutions increases the development of products and strategies in the context of Industry 4.0. Their findings indicate that firms engage in continuous innovation in response to the competitive pressures imposed by market attractiveness. As stated by Guo, Pérez-Castrillo, and Toldrà-Simats (2017) market coverage, through its influence on a firm's strategic direction, can significantly modulate the innovation quality of IP, underscoring the relevance of external market pressures in shaping IP strategies. Gök and Peker (2017) exploring how innovation performance is connected to market and financial performance, highlighted that market performance plays an important role in converting innovation into favourable financial results. Their research indicates that the attractiveness of the market not only directly influences the quality of innovation but also plays a vital role in how innovation contributes to overall corporate performance. Anand et al. (2016), adopting the framework of an innovation diffusion model, found a direct relationship between the breadth of market coverage and the success of a product in terms of diffusion and sales. In their research on the relationship between the direction, depth, and nature of openness and innovative achievement of Chinese companies, Chen et al. (2011) found that increased scope and depth of openness enhances innovative performance, suggesting that open innovation is applicable beyond science and*

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technology-focused innovation. According to Yun et al. (2016) the knowledge-based economy and open innovation, are related to the interdependencies among technology, business model innovation, and market expansion.

Purpose of the paper. Innovation, which is crucial for both competitive advantage and economic expansion, is driven by a variety of elements. These drivers can be classified into two main categories: internal and external. Each of which has a substantial impact on the innovative capabilities as well as outcomes of a company. It is important for organizations seeking to create a culture of innovation and preserve a competitive advantage in rapidly changing markets to recognize these drivers. Internal drivers of innovation may include: an organizational culture that promotes risk-taking, experimentation, and the open exchange of ideas providing an ideal environment for fostering innovation. Effective leadership that encourages and advocates for innovative projects is crucial as well as transformational leadership that has been recognized as a key factor in promoting innovation (Bass, 1985). The competence, creativity, and abilities of company's employees are essential factors that inspire innovation since companies that invest in personnel development and knowledge acquisition experience increased innovation outputs (Becker, 1964). Furthermore, the Resource-Based View (RBV) theory posits that an organization's resources and capabilities, which comprise its unique competencies, financial resources, and technological assets, are pivotal catalysts for innovation (Barney, 1991). Both technological advancements and the competitive dynamics within an industry are examples of external drivers of innovation. They may encourage businesses to innovate since businesses are driven to continuously innovate as a result of the pressure, they feel to maintain their competitiveness in the context of quickly evolving technologies and industry standards (Schumpeter, 1942). Moreover, innovations are frequently driven by changing demands and preferences of consumers. According to von Hippel (1988), market demand serves as a stimulus for innovation, which allows businesses to modify their goods and services to satisfy the expectations of their customers. Also, the rules, regulations, and incentives imposed by the government can have a considerable impact on innovation. In accordance with Edquist (1997), policies that encourage research and development activities, preserve intellectual property rights, and provide support for startup ecosystems all result to increased levels of innovation. Furthermore, collaborations with universities, research institutes, and other organizations, in addition to participation in innovation networks, have the potential to significantly increase the capacity of a company to innovate since these connections allow for access to novel ideas, resources, and markets (Powell, Koput, and Smith-Doerr, 1996).

Previous scholars analysed the impact of innovation considering several aspects. Zhao (2020) provided a foundational perspective on the relationship between technology and economic behaviour, highlighting the multifaceted ways in which technology can foster economic activities while also addressing potential negative impacts on society. Coccia (2017) in the study on problem-driven innovation, especially in fields like the pharmaceutical industry, where the co-evolution of problems and solutions drives radical innovations, found that the motivation behind firms' examination of innovative solutions to unsolved problems are a means to secure competitive advantages in technologically dynamic markets. However, by integrating the Disruptive Innovation theory with the Resource-Based View (RBV), the present study explores how firms can leverage their unique resources and market conditions to foster innovation. Christensen's (1997) introduction of the Disruptive Innovation concept transformed the way in which new competitors can challenge market leaders. Rather than aiming to improve their products for the existing customer base, they may achieve so by initially concentrating on underserved segments or addressing simpler demands. Subsequently, Christensen, Raynor, and McDonald (2015) provided further elucidation on the theory by differentiating "disruptive innovations" from those that are primarily efficiency-oriented. According to Barney's (1991) RBV of the firm, organizations obtain and maintain a competitive edge by acquiring and effectively managing resources that are valuable, rare, imitable, and non-substitutable (VRIN). Intellectual property, and patents in particular, are recognized as strategic assets that organizations can utilize to foster innovation and establish a unique position in the market (Hall, Jaffe, & Trajtenberg, 2005). Significantly influencing the change in the focus from external factors to internal capabilities, the RBV has highlighted strategic asset management as a critical success factor in encouraging innovation (Wernerfelt, 1984).

Extensive research has been conducted on the relationship between market competitiveness and innovation activity, and the results support both positive and negative effects on innovation intensity. An "inverted-U" relationship between competition and innovation is proposed by Aghion et al. (2005), which posits that moderate levels of competition foster innovation, whereas excessively high or low levels may impede it. This viewpoint is supported by other scholars that emphasises the role of firms' strategic asset management, specifically with regard to patents, in mitigating these consequences, enabling companies to effectively deal with competitive pressures and taking advantage of opportunities for innovation (Teece, 1986). In recent empirical investigations, the correlation between patent strategies and innovation outcomes has been examined. For example, research has indicated that companies that possess extensive patent portfolios not only safeguard their novel ideas but also serve as an indicator of their technological prowess to the market, thereby enticing investments and collaborations (Hsu & Ziedonis, 2013). Furthermore, there is a correlation between the market value and innovation performance of companies and the quality and applicability of patents (Bessen & Meurer, 2008).

Despite the extensive body of literature on Disruptive Innovation, the RBV, and market competitiveness, few studies have synthesized these perspectives to understand how firms can navigate competitive landscapes and leverage strategic assets to achieve deep innovation. Therefore, by adopting the theoretical framework of disruptive innovation and RBV, the purpose of the present study is to analyse the impact of external and internal innovation drivers on company's innovation depth. Hence, we propose the following hypotheses:

H1: There is a positive relationship between the number of innovator competitors (market competitiveness) and innovation depth.

H2: The depth of innovation decreases as the concentration of patents' portfolio increases.

H3: The depth of innovation increases as the economic value of patents becomes more relevant.

Methodology. *Our study develops a quantitative analysis based on data collated through Orbis Intellectual Property (Orbis IP) database of Moody’s Analytics, former Bureau van Dijk. The analysis focuses on listed companies of the following European countries: Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Gibraltar, Greece, Iceland, Ireland, Italy, Luxembourg, Monaco, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and Turkey,*

The sample includes non-financial firms, with a total of 12958 observations. An unbalanced panel covering a period from 2013 to 2021. We perform the firm-fixed effects analysis to eliminate unobservable heterogeneity with robust standard errors.

Table 1 reports a comprehensive description of the variables used in our preliminary empirical analysis.

The dependent variable is “Depth of innovation” the level or magnitude of novelty and change introduced by an innovation, valued by IPBI (<https://www.ip-bi.com>). It is related to all other companies with patents in the same branch to be fully comparable to the direct competitive environment.

Our main explanatory variables are:

- *“Market competitiveness”, as proxy of external innovation driver. It is the number of competitors that are active with innovations made in the technical fields of the company, valued by IPBI (<https://www.ip-bi.com>).*
- *“Patents portfolio”, as proxy of firm-level innovation driver. It is a measure of concentration of values across the IP portfolio, valued by IPBI (<https://www.ip-bi.com>). It measures if the value of patents’ portfolio of a firm is concentrated in a few patents or homogenously dispersed among all the patents.*
- *“Patents relevance”, as proxy of firm-level innovation driver. It is measured by the total value of patents in portfolio (valued by IPBI, <https://www.ip-bi.com>) scaled to the company’s total assets (by Orbis database).*

Traditional control variables are included in the model. Cash Holding, amount of liquidity held by the company, and Leverage are considered in our analysis as financial capital variables. Tangibility represents the firm tangible assets, and it is measured by the ratio of tangible assets to total asset. It could strengthen firms’ financial capacity since they are used as collateral. This group of financial variables can give a general idea of the firm’s financial resources that could be invested in strategic projects, such as those related to innovation. We control, also, for firm Size (natural logarithm of total assets) and firm Age (natural logarithm of number of years since the firm foundation plus one), as proxy for the reputation and track record a company gains over the years. Net Working Capital, Industry-Adjusted MtB ratio, Return on Asset (ROA), Industry-Adjusted Growth Sales are well-established firm performance measures.

Tab. 1: Description of the variables used in the analysis

Variables	Description
<i>Dependent variable</i>	
Depth of innovation	It refers to the level or magnitude of novelty and change introduced by an innovation, valued by IPBI (https://www.ip-bi.com). It is related to all other companies with patents in the same branch to be fully comparable to the direct competitive environment.
<i>Independent variables</i>	
Market competitiveness	From an intellectual property point of view, number of competitors that are active with innovations made in the technical fields of the company, valued by IPBI (https://www.ip-bi.com)
Patents portfolio	It is a measure of concentration of values across the IP portfolio, valued by IPBI (https://www.ip-bi.com). It measures if the value of patents’ portfolio of a firm is concentrated in a few patents or homogenously dispersed among all the patents.
Patents relevance	Total value of patents in portfolio (processed by IPBI - https://www.ip-bi.com) scaled to the company’s total assets (by Orbis database)
<i>Control variables</i>	
Cash Holding	Cash and cash equivalent on total assets.
Leverage	Financial debt on total assets
Tangibility	Tangible assets to total assets
Firm Size	Natural logarithm of total assets
Firm Age	Natural logarithm of number of years since the firm foundation plus one
Net Working Capital	Current assets minus short term liabilities
Industry-Adjusted MtB ratio	Firm’s MTB ratio minus two-digits industry MTB ratio. MtB is the firm’s market value of equity scaled to book value of equity.
ROA	Ratio between EBIT and total assets
Industry-Adjusted Growth Sales	Firm’s annual rate of growth of sales minus two-digits industry annual rate of growth of sales

Source: our elaboration

Results. *The following table reports the descriptive statistics of the sample analyzed, the mean, median, standard deviation, quartiles, minimum and maximum values of the variables considered in the analysis.*

Tab. 2: Descriptive statistics

Mean	Median	sd	min	p25	p75	max
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Depth of innovation	0.814	0.842	0.145	0.120	0.699	0.933	1.000
Market competitiveness	0.661	0.685	0.252	0.000	0.515	0.853	1.000
Patents portfolio	0.762	0.790	0.229	0.030	0.600	1.000	1.000
Patents relevance	0.114	0.008	0.332	0.000	0.000	0.060	2.364
Cash holdings	0.177	0.115	0.182	0.000	0.058	0.223	0.992
Leverage	0.216	0.191	0.183	0.000	0.072	0.314	1.000
Tangibility	0.198	0.144	0.181	0.000	0.055	0.294	0.958
Size	12.815	12.746	2.588	5.289	10.856	14.798	19.704
Age	3.468	3.434	0.919	0.000	2.833	4.159	5.908
Net Working Capital	0.140	0.126	0.146	-1.561	0.037	0.224	0.872
Industry-Adjusted MtB ratio	-0.261	-0.710	7.370	-32.477	-2.179	0.946	35.860
ROA	-0.011	0.049	0.258	-4.400	-0.017	0.093	6.274
Industry-Adjusted Growth Sales	-0.005	-0.067	0.619	-2.252	-0.203	0.051	4.658

N. Observations: 12958

Source: our elaboration from Orbis IP and Orbis database

Table 3 presents the correlation matrix of the variables. It does not show particularly high correlations. In addition, we assessed the potential multicollinearity among the independent variables using variance inflation factors (VIFs). The average VIF is 1.27 (max VIF=1.61), which is below the generally employed cut-off of 10 (or, more prudently, 5) for regression models (Kutner et al., 2004), suggesting that multicollinearity does not affect our results.

Tab. 3: Correlation matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	VIF
1 Depth of innov.	1.00													
2 Market competitiv.	0.13	1.00												1.04
3 Patents portfolio	-0.26	-0.04	1.00											1.02
4 Patents relevance	0.24	0.10	-0.11	1.00										1.36
5 Cash holdings	0.12	0.13	-0.05	0.31	1.00									1.51
6 Leverage	-0.04	-0.03	0.01	-0.07	-0.28	1.00								1.22
7 Tangibility	-0.04	-0.15	0.00	-0.18	-0.32	0.29	1.00							1.26
8 Size	0.16	-0.02	-0.01	-0.36	-0.35	0.19	0.29	1.00						1.61
9 Age	-0.01	-0.10	0.03	-0.20	-0.29	0.04	0.19	0.33	1.00					1.25
10 Net Working Capital	-0.11	-0.08	0.03	-0.11	-0.24	-0.11	-0.09	-0.13	0.19	1.00				1.31
11 Industry-Ad. MtB ratio	0.02	-0.00	-0.00	0.05	0.06	-0.07	-0.02	-0.04	-0.04	0.01	1.00			0.98
12 ROA	-0.07	-0.08	0.04	-0.44	-0.32	-0.05	0.16	0.41	0.29	0.25	0.00	1.00		1.57
13 Industry-Adjusted Growth Sales	0.00	0.02	0.01	0.08	0.13	-0.05	-0.05	-0.12	-0.12	-0.07	0.04	-0.13	1.00	1.04

Notes: Correlations greater than 0.03 or lower than -0.03 are statistically significant at the 0.05 level or lower.

Source: our elaboration from Orbis IP and Orbis database

The Table 4 presents the main results of our study. In column (2) it is reported the main model results, based on firm-fixed effect.

Tab. 4: Results concerning the relationship between innovation drivers and the depth of innovation.

	(1)	(2)
	only control variables	Main Model
Market competitiveness		0.027*** (0.004)
Patents portfolio		-0.047*** (0.004)
Patents relevance		0.034*** (0.005)
Cash Holdings	-0.001 (0.008)	0.004 (0.008)
Leverage	0.008 (0.007)	0.004 (0.007)
Tangibility	-0.038*** (0.012)	-0.031** (0.012)
Size	0.004* (0.002)	0.008*** (0.002)
Age	0.012* (0.006)	0.010* (0.006)

Net Working Capital	0.015	0.016
	(0.011)	(0.011)
ROA	-0.004	0.003
	(0.005)	(0.005)
Industry-Adjusted MtB ratio	0.000	0.000
	(0.000)	(0.000)
Industry-Adjusted Growth Sales	-0.000	-0.000
	(0.001)	(0.001)
Constant	0.747***	0.709***
	(0.032)	(0.034)
R ²	0.058	0.075
Observations	12958	12958

Notes: Results based on fixed-effect estimation. For the description of the variables, see Table 1. Robust standard errors are reported in brackets. ***: denotes significance at the 1% level; **: denotes significance at the 5% level; *: denotes significance at the 10% level.

Source: our elaboration

The variable “Market competitiveness” is positive and statistically significant. It means that as the number of innovator competitors increases (market competitiveness), the depth of innovation increases.

In column 2, the negative and statistically significant coefficient of the variable “Patents portfolio” reveals that the presence of few patents of value compared to the total number of patents decreases depth of innovation.

Concerning the variable “Patents relevance”, as the economic value of patents becomes more relevant, the level of company’s innovation increases.

Research limitations. This study is an initial exploratory analysis, a work-in-progress regarding a sample of European listed firms operating in non-financial sectors. In our future research we want to complete this analysis examining how the impact of this external and internal innovation drivers on firms’ innovation depth differs by sector and considering the role of moderating variables on the relationship studied. In this regard, more advanced econometric techniques could be useful to better understand the relationship investigated.

Managerial implications. Our preliminary findings suggest, first of all, that market dynamics, in introducing heterogeneity of firms in industries, is a core factor shaping innovation depth. Higher competitiveness in the market fosters disruptive innovation by firms in search of long-term competitive advantages. In line to what suggested by the classical work of Smith (1776), named the “escape effect”, market competitiveness generates greater incentives to firms to develop innovative processes. Innovators could successfully escape competition in the long-run by gaining a competitive advantage and a certain degree of future market power. Thus, competition boosts higher level innovation.

In a similar vein, it results a sort of path dependence in innovation. Firms having higher value of patents, a track record of success in high impact patenting, are the one that are able to innovate at most.

Finally, it results that if the value of innovation is concentrated in a few patents, a low number of patents provides the vast majority of patent value. Specialization, to have a focus on specific knowledge, is at the core of greater advancement in research and innovation of higher prominence.

Competitiveness, when coupled with a strategic approach to intellectual property management, significantly enhances the technical depth of innovations. These findings contribute to the broader discourse on innovation management, offering insights into the mechanisms through which firms can sustain competitive advantage in dynamic markets.

From a managerial point of view, this research offers practical insights for managers on leveraging intellectual property and aligning innovation strategies with market conditions to foster sustainable competitive advantage.

From a policy point of view, regulations that promote equal competition may encourage the admission of new firms into markets and the introduction of innovative products and processes, subsequently impacting market structures.

The research indicates that companies tend to provide more innovative solutions when operating in a competitive environment that fosters a culture of innovation and offers valuable perspectives into the innovative behavior of European companies.

Originality of the paper. This present research contributes to the existing body of literature on innovation management by providing empirical evidence on internal and external innovation drivers that affect company innovation depth. The analysis is developed using variables and measures in line with the literature which represent a novelty for the research stream on Innovation depth. The key contributions of the paper are threefold. First, we conduct an empirical examination of the significance of three distinct categories of innovation drivers, namely market competitiveness, patent portfolio, and patent relevance (as in Table 1). Second, we differentiate between drivers that are sourced internally or externally. Finally, the effect of these variables on the depth of innovation is evaluated, regardless of whether the innovation is incremental or radical. Overall, the findings contribute to the theoretical discourse on innovation management, emphasizing the synergy between competitive strategies and intellectual property management in fostering innovation. This research framework underscores the complexity of innovation processes, highlighting the interdependencies between market forces, strategic assets, and firm capabilities in shaping innovation trajectories.

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Innovation in I4.0 and firms performance in Italy

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Abstract

This paper addresses the substantial debate surrounding Industry 4.0 (I4.0) and its impact on techno-economic systems, capturing the attention of business managers and policy-makers. Despite the acknowledged influence of I4.0 on firms, countries, and clusters, empirical assessments at the firm level have been scarce. The study aims to fill this gap by investigating the link between innovation in I4.0 technologies and firm performance.

The research underscores the dual benefit of I4.0 innovation—enabling technological solutions within enterprises and ensuring market success. Grounded in the idea that firm-developed knowledge influences economic performance, the study conducts a long-term analysis based on patents related to I4.0 from Italian companies (2010-2019). The central question revolves around the impact of I4.0 innovation on firm performance.

Using patents as an innovation proxy, the study examines spillovers on business and market performance, focusing on new knowledge and innovation processes in I4.0 technologies. Employing EPO's (2017) methodology, it identifies I4.0 patents from Italian inventors and correlates them with firm-level information from the AIDA Bureau van Dijk database.

Results from scatter-plots and regression analysis, reveal a positive relationship between patent generation in I4.0 and firm performance. This correlation remains stable across periods and performance indices, albeit within a predominantly large enterprise sample. The study contributes valuable insights to the discourse on the tangible effects of I4.0 innovation at the firm level.

Key words: Innovation, Industry 4.0, patents, firms' performance

Framing of the research. *The contemporary discourse surrounding Industry 4.0 (I4.0) has engendered a widespread and intricate debate within the academic and industrial spheres. The I4.0 paradigm, which integrates digital technologies with traditional industrial processes, has become a focal point of discussion, garnering substantial attention from business managers and policy-makers alike. The literature reflects a comprehensive exploration of the profound impact that I4.0 can exert not only on individual firms but also on broader techno-economic systems, spanning nations, regions, clusters, and industrial districts (Piccarozzi et al., 2018).*

This burgeoning body of work underscores the transformative potential of I4.0, tracing its roots back to the coining of the term by Kagerman et al. (2011). The literature has consistently emphasized the considerable influence I4.0 can wield (BCG, 2015; Capone and Innocenti, 2023; Capone et al., 2023; Mariani and Borghi, 2022; Piccarozzi et al., 2018). Beyond its impact on individual enterprises, the discourse extends to the macroeconomic level, examining the effects on countries and regions (Hervás Oliver et al. 2021; Götz & Jankowska, 2017).

However, despite over a decade of exploration since the inception of the I4.0 concept, a notable gap in the literature persists. While there is a growing body of empirical studies assessing the overall phenomenon, the focus has predominantly centered on adoption, development, and implementation of I4.0 technologies (Mariani and Borghi, 2022; Bettiol et al., 2021; Capestro et al., 2022; Cirillo et al., 2023). This concentration, while valuable, has been relatively silent regarding the impact of I4.0 technology at firm level. Benassi et al. (2022) and Raj and Seamans (2018) emphasize the scarcity of empirical evidence and the need for enterprise-level data on I4.0 and AI-related technologies.

In response to this gap, this paper positions itself within the broader discourse to explore the firm-level implications of I4.0 technology implementation. It aligns with Benassi et al. (2022) observe that empirical evidence in this domain is sparse (Cirillo et al., 2023; Bettiol et al., 2023a, b). By delving into the relationship between innovation in I4.0 technologies and firm performance, the research seeks to contribute nuanced insights to this ongoing debate, shedding light on unexplored dimensions of the I4.0 paradigm's impact on techno-economic systems.

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Purpose of the paper. *The primary objective of this research is to make a substantial contribution to the ongoing discourse surrounding the impact of Industry 4.0 (I4.0) innovation on firm performance.*

Specifically, the study seeks to investigate the link between innovation in I4.0 technologies and the subsequent performance of firms. The aim is to shed light on how the ability to produce innovation in the context of I4.0 can catalyze a twofold benefit for organizations. Firstly, it aims to discern the impact on firms' internal processes, including the implementation of technological solutions and the initiation of product/process innovations. Secondly, it aims to investigate the external ramifications, focusing on the ability of firms to commercialize these technological solutions in the market successfully.

Given the acknowledged scarcity of empirical evidence on the firm-level impacts of I4.0 technology implementation, the research aims to address this gap by conducting a comprehensive and longitudinal analysis. The chosen timeframe spans from 2010 to 2019, allowing for a thorough examination of the sustained effects of I4.0 innovation on both business and market performance.

Building on existing studies, notably the work by Benassi et al. (2022) that establishes a positive correlation between innovation in I4.0 and firm productivity, this research aspires to extend the inquiry further. The focus is not solely on immediate productivity gains but on assessing whether the spillovers of innovation in I4.0 can manifest in enduring positive impacts on business performance.

The research utilizes a robust methodology, leveraging patents as a proxy for innovation, to measure the development of knowledge and skills over time. By concentrating on patents related to I4.0 developed by Italian companies, the study endeavors to capture a nuanced understanding of the intricate relationship between innovation production in I4.0 and subsequent firm performance.

In summary, the overarching aim of this research is to provide nuanced insights into the firm-level implications of I4.0 innovation. Through a rigorous analysis of patents and firm-level data, the research seeks to contribute valuable knowledge to both academic discussions and practical considerations for businesses navigating the dynamic landscape of Industry 4.0.

Methodology. *This study employs a quantitative methodology to investigate the link between innovation in Industry 4.0 (I4.0) technologies and firm performance. Building on existing literature gaps, our approach integrates patent analysis, longitudinal examination, and firm-level data exploration.*

Firstly, the study focuses on patents related to I4.0 technologies developed by Italian companies during the period 2010-2016. Patents serve as a key indicator of innovation, offering a tangible measure of firms' commitment to I4.0 advancement. The choice of patents as a proxy aligns with established methodologies in innovation studies (Griliches, 1990).

To assess the influence of I4.0 innovation on company performance, the study adopts a long-term analysis, spanning the period from patent development (2010-2015) (patents realized in the period 2010-2015 with depreciated rate by 10%) to subsequent years before the pandemic (2017-2019) (See Figure 1 and Table 1). This temporal extension allows for a nuanced understanding of the enduring effects of I4.0 innovation on firm performance over time.

Furthermore, the research employs a dual-level data collection process. Initially, patents in I4.0 technologies made by Italian inventors and applicants are identified using the methodology established by the European Patent Office (EPO) in 2017. Subsequently, firm-level information for each patent applicant is extracted from the AIDA Bureau van Dijk database. This comprehensive dataset integration ensures a robust exploration of the relationship between I4.0 patents and firm performance.

By employing statistical analysis, scatter-plots and regression techniques, the study aims to unveil the patterns and relationships between the ability to generate patents in I4.0 and firm performance. Notably, this analysis goes beyond a mere correlation assessment; it delves into the nuances of the relationship, ensuring a nuanced understanding of the impact of I4.0 innovation on various performance indices.

Results. *The study establishes a positive correlation between the production of innovation in Industry 4.0 (I4.0) technologies and the overall performance of companies in Italy (Figure 1 and Table 1). These findings align with similar research (Benassi et al., 2022; Cirillo et al., 2023). Unlike Benassi et al. (2022), who attributed inconclusive results to a relatively short analysis period, our longitudinal study, spanning from 2010 to 2019, captures the link between I4.0 innovation and economic performance, providing a more comprehensive understanding.*

However, specific considerations deserve attention. The sample selection process predominantly focuses on companies exhibiting intense patenting activities at the European level, directing the analysis towards large enterprises. This strategic choice inadvertently limits the representation of smaller entities. The study recognizes the absence of insights from small and medium-sized enterprises (SMEs) and acknowledges the necessity for future research to bridge this gap, providing a more holistic view of the diverse business landscape.

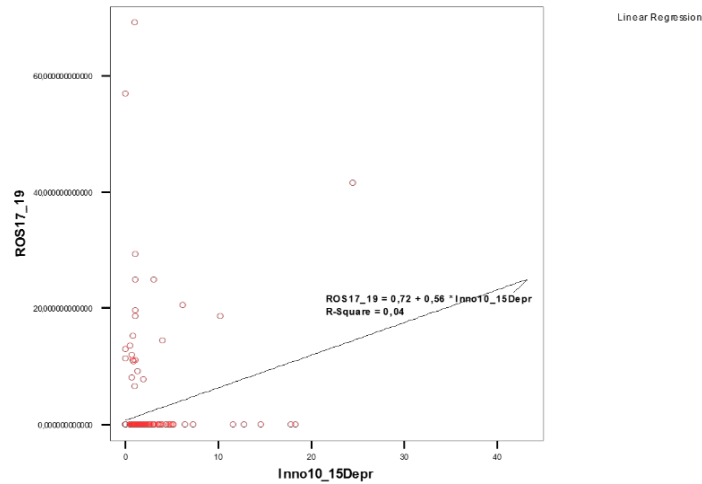
Moreover, the study has endeavored to address issues of reverse causality by incorporating a significant temporal lag between variables. It is essential to acknowledge that certain outcomes align with prior research, as evidenced by Benassi et al. (2022), emphasizing that 98% of I4.0 patents in Europe originate from large enterprises.

The preliminary analysis underscores the impact of company size, revealing a positive correlation between all variables and firm size, measured in terms of both employees and revenue. This nuance underscores the importance of delving into the perspectives of SMEs, warranting future studies to address this aspect comprehensively.

In conclusion, despite the acknowledged considerations, this paper adds a meaningful dimension to the ongoing discourse on the impact of I4.0 technologies on business performance. The study prompts further scientific exploration,

both theoretically and methodologically, offering compelling insights and laying the groundwork for future developments in this evolving research domain.

Figure 1: ROS 2017-2019 and I40 Patents realized in 2010-2015.



Source: our elaborations.

Table 1: Estimations results.

Variables	Mod1	Mod2	Mod3	Mod4	Mod5 ¹
Estimation	LR	LR	LR	LR	GLM(LOG)
Y / Dependent variable	ROS 17-19	ROS 14-16	SALES 17-19	ROS 17-19	ROS 17-19
Patents I40 ₂₀₁₀₋₂₀₁₅ Depreciated	0.128** (0.022)	0.196*** (0.001)	0.091* (0.069)	0.574*** (0.003)	0.471*** (0.000)
Cost R&S ₂₀₁₀₋₂₀₁₂	-0.161*** (0.003)	-0.202*** (0.000)	-0.273*** (0.000)	-0.163*** (0.003)	-0.001*** (0.000)
Dummy Very Large	0.166*** (0.003)	0.085* (0.131)	0.152*** (0.002)	0.179*** (0.001)	1.851*** (0.000)
Patent Provincial Propensity ₂₀₁₀₋₂₀₁₂	0.110** (0.040)	0.098* (0.072)	0.038 (0.437)	0.092* (0.085)	0.006* (0.109)
Firms total Patents				-0.469** (0.016)	-0.301*** (0.000)
R2 / LR Chi-Square	0.334	0.358	0.359	0.350	2301,136
Max. VIF	1.083	1.081	1.059	13.404	-
Obs.	377	377	377	377	377

***p < 0.01. **p < 0.05. *p < 0.1.

¹ Similar results also with Robust standard Error.

Research limitations. While the study provides valuable insights, it is essential to acknowledge and elaborate on certain limitations that may influence the interpretation and generalizability of the findings.

Firstly, the reliance on patents as a sole proxy for innovation introduces a potential limitation. Patents predominantly capture a specific type of innovation and may not fully encompass the broader spectrum of innovative activities within organizations. It is conceivable that some innovative endeavors, particularly those in the rapidly evolving landscape of Industry 4.0 (I4.0), might not be adequately represented through the patent data. Thus, the study's focus on patents may inadvertently underestimate certain non-patentable innovations or collaborative efforts that contribute significantly to firm performance.

Moreover, the study's geographical focus on Italian inventors and applicants may restrict the generalizability of findings to a more global context. Different regions may exhibit distinct innovation ecosystems, regulatory environments, and market dynamics, influencing the relationship between I4.0 innovation and firm performance. Thus, caution is warranted when extrapolating these findings to other countries or international settings.

The composition of the sample, predominantly comprising large enterprises, introduces a potential sample bias. The findings may not fully capture the dynamics and challenges faced by small and medium-sized enterprises (SMEs) in

adopting and benefiting from I4.0 innovations. SMEs often operate under resource constraints and may face different barriers to innovation compared to their larger counterparts. Future research should explore these nuances to provide a more comprehensive understanding of I4.0's impact across diverse organizational sizes.

The temporal scope of the study, covering the years 2010 to 2019, may introduce limitations in capturing the most recent developments in the I4.0 landscape. Given the rapid evolution of technology, the study's insights may not fully reflect the current state of I4.0 adoption and innovation strategies. Therefore, the findings should be interpreted with a consideration of the evolving nature of the I4.0 paradigm.

Additionally, the study focuses on the relationship between I4.0 innovation and firm performance without delving into potential mediating or moderating factors. Future research could explore contextual elements, such as organizational culture, leadership styles, or external market conditions, to offer a more nuanced understanding of the mechanisms influencing this relationship.

In conclusion, while the study contributes significantly to the discourse on I4.0 innovation and firm performance, researchers and practitioners should interpret the findings within the context of these limitations. Addressing these limitations in future research endeavors will further enrich our understanding of the complex dynamics surrounding the impact of I4.0 on organizational outcomes.

Managerial implications. The study's findings offer valuable insights with direct implications for managerial decision-making in the context of Industry 4.0 (I4.0) adoption and innovation strategies.

Firstly, the positive correlation identified between the ability to generate patents in I4.0 technologies and firm performance underscores the strategic importance of fostering an innovative culture within organizations. Managers should actively encourage and support initiatives that promote innovation in I4.0, recognizing it as a driver of enhanced performance metrics. This involves dedicating resources to research and development activities specifically focused on I4.0 technologies.

Moreover, the dual benefit highlighted in the study, whereby innovation in I4.0 not only improves internal processes but also contributes to market success, emphasizes the need for a holistic approach. Managers should aim to align innovation efforts with both internal operational enhancements and external market competitiveness. This may involve developing products or solutions that are not only technologically advanced but also resonate with market demands and trends.

Furthermore, the findings suggest that a proactive approach to innovation in I4.0 can contribute to sustained firm performance over time. Managers are encouraged to view innovation not as a one-time effort but as an ongoing process. Long-term planning and investment in I4.0 technologies may yield spillover effects that positively impact business and market performance.

In conclusion, the study's managerial implications call for a strategic focus on fostering innovation in I4.0 technologies, aligning internal and external goals, securing intellectual property, and adopting a long-term perspective. Embracing these implications can position organizations at the forefront of the dynamic I4.0 landscape, driving sustained success and competitiveness.

Originality of the paper. This study significantly contributes to the existing body of literature by offering novel perspectives and addressing gaps in the understanding of the relationship between Industry 4.0 (I4.0) innovation and firm performance. Several aspects underscore the originality of this research.

Firstly, the study navigates uncharted territory by focusing on the firm-level impact of I4.0 technology implementation. Despite the extensive literature on I4.0, empirical examinations at the organizational level remain scarce. By specifically investigating the link between innovation in I4.0 technologies and firm performance, the study ventures into a critical area that has received limited attention to date.

Secondly, the temporal dimension adds a distinctive layer to the research's originality. While the I4.0 paradigm has been under scrutiny for over a decade, this study bridges the gap between the initial years following its conceptualization and a subsequent period, providing a longitudinal perspective. This temporal depth allows for a nuanced understanding of the enduring impact of I4.0 innovation on firm performance, providing insights that extend beyond immediate effects.

Furthermore, the choice of patents as a proxy for innovation introduces a methodological innovation to the study. Patents serve as tangible indicators of firms' commitment to I4.0 innovation and provide a measurable metric for knowledge and skill development over time. This methodological choice not only aligns with the study's objectives but also contributes to the methodological toolkit available for investigating the impact of emerging technologies on organizations.

The incorporation of an Italian context into the analysis also enhances the originality of the study. By focusing on patents developed by Italian inventors and applicants, the research acknowledges the importance of considering regional and national contexts in understanding I4.0 innovation dynamics. This contextual specificity contributes to the richness of the findings and facilitates a more nuanced interpretation of the relationship between I4.0 innovation and firm performance.

In summary, the originality of this paper lies in its targeted exploration of firm-level impacts of I4.0 innovation, the longitudinal perspective it adopts, the methodological innovation in using patents as a measure of innovation, and the contextual richness introduced through the focus on the Italian landscape. These elements collectively position the study as a distinctive and valuable contribution to the evolving literature on I4.0 and its implications for organizational outcomes.

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The “5Vs” of Big Data and the Propensity to Generate Patents with Big Data Technologies in SMEs

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Abstract

In the contemporary digital landscape, the exponential growth of data, commonly referred to as Big Data, has become indispensable for businesses worldwide. Understanding the fundamental characteristics of Big Data, encapsulated by the “5Vs” (Volume, Variety, Velocity, Veracity, and Value), is crucial for deriving value and fostering innovation. This research explores the nexus between these “5Vs” and the propensity of Small and Medium-sized Enterprises (SMEs) to generate patents based on Big Data technologies. The study employs a knowledge-based view (KBV) framework to investigate this relationship, focusing on Italian SMEs. Through a questionnaire-based survey involving 135 SMEs, the research analyzes the impact of each of the “5Vs” on the generation of patents with Big Data technologies. The methodology utilizes multinomial probit analysis to assess the likelihood of developing different levels of patents in relation to the “5Vs” of Big Data. Findings suggest that while the “Variety” of data positively influences SMEs’ propensity to generate patents, other factors such as “Volume”, “Velocity”, “Veracity”, and “Value” show varying degrees of significance. Notably, the study reveals a counterintuitive relationship where a higher volume of data impedes SMEs’ patent generation activities. Similarly, factors like real-time data processing speed, data quality, and value extraction from Big Data show no significant impact on patent generation. This research underscores the importance of understanding the nuanced interplay between different dimensions of Big Data and innovation outcomes, particularly for SMEs. The findings suggest that SMEs should prioritize enhancing the diversity and sources of their data over sheer volume or speed of processing. Moreover, the study emphasizes the need for SMEs to consider the potential “dark side” effects of Big Data, advocating for a shift towards leveraging “Smart Data” rather than focusing solely on Big Data. In conclusion, this work contributes novel insights by highlighting the complex relationship between the “5Vs” of Big Data and SMEs’ patent generation activities. The findings offer valuable guidance for SMEs seeking to navigate the digital landscape effectively, innovate, and maintain competitiveness in the market.

Key words: big data; patents; SMEs.

Framing of the research. *In the digital age in which we live, the amount of data generated every day is growing exponentially (Cappa et al., 2021). This immense amount of data, commonly known as Big Data, has become an invaluable resource for businesses and institutions around the world (Ferrigno et al., 2023). Specifically, by Big Data we mean “any set of data that, with traditional systems, would require large capabilities in terms of storage space and time to be analyzed” (Del Vecchio et al., 2018, p. 6). However, managing, analyzing and deriving value from this mass of information requires not only advanced technological tools, but also a thorough understanding of its fundamental characteristics, the so-called “5Vs”: Volume, Variety, Velocity, Veracity and Value (Acciarini et al., 2023). “Volume” refers to the amount of data (Ghasemaghahi and Calic, 2019). With the advent of the Internet of Things (IoT), social media, and other digital devices, the volume of data has exploded to unprecedented levels. This enormous flow of information offers endless opportunities for analysis and innovation. “Variety” refers to the different types of data collected and processed by an enterprise (Ghasemaghahi, 2021; Pedota, 2023). This diversity includes text, images, audio, video, and more. The ability to integrate and analyze a wide range of data is critical to fully understand the context and gain meaningful insights for firms’ R&D activities (Ferrigno et al., 2023). The “Velocity” of Big Data refers to “the speed and the frequency of processing and integrating data” (Ghasemaghahi and Calic, 2020, p. 150; Ghasemaghahi et al., 2017). With the world becoming increasingly connected and real-time, the ability to analyze data in real time becomes essential to seize immediate opportunities and make informed decisions. “Veracity”, on the other hand, is defined as*

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“reliability and credibility of data” (Ghasemaghahi and Calic, 2019; p. 73). Data quality is critical to ensure that analyses and decisions based on them are valid and reliable. Verification and management of data quality are therefore crucial in any analysis process. The fifth V, “Value”, refers to “firm’s ability to create value from big data” (Cappa et al., 2021, p. 53; Ghasemaghahi, 2021). In this sense, the value of Big Data is not intrinsic, but depends on the ability to interpret and use the data effectively to achieve desired goals.

The potential of Big Data has taken a central role in the development and growth of not only large organizations but also small and medium-sized enterprises (SMEs) (Vitale et al., 2010). SMEs are a key pillar of the global economy, contributing significantly to innovation and value creation (Müller et al., 2017). Understanding the relationship between the “5Vs” of Big Data and the propensity of SMEs to generate patents based on Big Data technologies is crucial to take full advantage of the opportunities offered by this digital revolution (Del Vecchio et al., 2018). Specifically, the importance of relying on patents stems from the fact that they can be valid measures of innovation and, when related to Big Data technologies, excellent measures to better understand the evolution of Big Data technologies (Saheb and Saheb, 2020). In addition, specifically for SMEs, patents can be considered as valid predictors of business performance (Müller et al., 2017).

Purpose of the paper. The purpose of the present “work-in-progress” is to understand which “Vs” have the greatest impact on the propensity to generate patents with Big Data technologies, considering the fact of the potential “dark side” effects of Big Data (Cappa et al., 2021). Through the lens of the knowledge-based view (KBV, Grant, 1996), the present research work aims to address the following research question:

RQ: Which Vs of Big Data have an impact on the generation of patents based on Big Data technologies in SMEs?

To address this research question, we give below some reasons for the relationship between “5Vs” and the propensity to develop patents on big data.

Volume

The huge volume of available data offers multiple opportunities for innovation in various sectors (Cappa et al., 2021), including for SMEs (Del Vecchio et al., 2018). Companies can develop new technologies and solutions based on Big Data to improve their products, services, or operational processes, resulting in new ideas (Johnson et al., 2017) that can be protected through patents. In a competitive environment, access to big data can provide a significant strategic advantage (Ghasemaghahi and Calic, 2019; Ghasemaghahi, 2021). Firms that can effectively exploit the volume of available data can develop innovative and advanced solutions that set them apart from competitors, potentially leading to patents for their distinctive technologies. Nonetheless, managing large volumes of data can be expensive (Cappa et al., 2021; CoalaData, 2014; Trabucchi et al., 2017), especially for SMEs that are characterized by resource scarcity. As suggested by recent empirical work, the role of “Volume” on business outcomes may be characterized by non-significance (Ghasemaghahi, 2021; Ghasemaghahi and Calic, 2019) or even negative effects (Cappa et al., 2021). In line with the above, our first hypothesis is as follows:

H1: Volume is negatively correlated with the propensity to develop patents with big data technologies.

Velocity

The speed at which data are generated and analyzed can affect a company’s ability to adapt quickly to changing market conditions (Ghasemaghahi and Calic, 2019). Technologies that enable real-time data processing and analysis can be invaluable in developing innovative solutions that improve operational efficiency or the ability to respond promptly to customer needs.

The ability to rapidly collect and analyze data can enable companies to identify emerging trends, market opportunities, or potential problems (Johnson et al., 2017). Technological solutions that facilitate this responsiveness can be patentable, thus protecting the firm’s investment in these advanced capabilities. Moreover, in a rapidly changing environment, the speed at which data become obsolete is a critical factor (D’Aveni et al., 2017; Johnson et al., 2017). Companies that develop technologies to manage and analyze large volumes of data in real time can reduce the risk of information obsolescence and gain a competitive advantage. These innovative solutions can be patented to protect their uniqueness and value. In line with the above, our second hypothesis is as follows:

H2: Velocity is positively correlated with the propensity to develop patents with big data technologies.

Variety

The diversity of data types available requires innovative solutions to effectively integrate and analyze all these sources of information (Ghasemaghahi and Calic, 2020). Companies that develop technologies to manage the variety of Big Data extract value from this diversity can gain a competitive advantage. These solutions may be subject to patenting to protect their intellectual property.

Different types of data require specific analytical approaches to extract meaningful information. Companies that develop innovative algorithms or methodologies to analyze heterogeneous data can gain a competitive advantage (Ghasemaghahi, 2021). These solutions can be patented to protect their uniqueness and ensure a return on R&D investment. Moreover, the variety of Big Data provides opportunities to customize services and offerings to the specific

needs of customers (Johnson et al., 2017). Companies that develop technologies to collect, integrate, and analyze data from multiple sources can offer highly personalized services that increase customer satisfaction and loyalty. These innovative solutions may be subject to patenting to protect their intellectual property and maintain a competitive advantage in the market. In line with the above, our third hypothesis is as follows:

H3: Variety is positively correlated with the propensity to develop patents with big data technologies.

Veracity

Data quality and reliability are crucial to obtaining accurate and meaningful results from Big Data analysis (Cappa et al., 2021). Companies that develop technologies to assess and improve the veracity of data can gain a competitive advantage. These solutions may be subject to patenting to protect their intellectual property and ensure customer confidence in the results of data analysis. Data “Veracity” can be compromised by cybersecurity threats, such as unauthorized access, data breaches, or manipulation (Brook, 2019). Companies that develop technologies to protect the veracity and integrity of sensitive data can gain a competitive advantage. These innovative solutions may be subject to patenting to protect their intellectual property and ensure the security of customer information. Moreover, much of Big Data is unstructured data, such as text, images, or video. Managing and analyzing this information effectively requires innovative solutions (Ghasemaghahi and Calic, 2020). Companies that develop technologies to extract value from unstructured data can gain a competitive advantage. These solutions may be subject to patenting to protect their intellectual property and ensure a return on R&D investment.

H4: Veracity is positively correlated with the propensity to develop patents with big data technologies.

Value

Extracting value from Big Data through data analysis and interpretation can enable companies to identify new market opportunities, optimize business operations, and improve customer satisfaction (Cappa et al., 2021; Ghasemaghahi, 2021). Innovative technologies that harness the value of Big Data may be subject to patenting to protect their uniqueness and ensure a competitive advantage in the marketplace.

Using Big Data to optimize business processes, reduce costs, and improve operational efficiency can generate significant savings and competitive advantages (Brynjolfsson et al., 2011; Ghasemaghahi, 2019; Tambe, 2014). Companies that develop technologies to extract value from Big Data and improve their internal operations can gain a competitive advantage. These innovative solutions can be patented to protect their intellectual property and ensure a return on their R&D investment. Moreover, using Big Data to better understand customer needs and preferences can enable businesses to offer highly personalized services and improve customer satisfaction (Cappa et al., 2021; Johnson et al., 2017). Innovative technologies that allow Big Data to be analyzed and used to personalize services may be subject to patenting to protect their uniqueness and ensure a competitive advantage in the market.

H5: Value is positively correlated with the propensity to develop patents with big data technologies.

Methodology. We collected the data of 135 Italian SMEs by submitting a questionnaire to gather information and data on both the Big Data characteristics, the patents with Big Data technologies done by the SME and other firm’s characteristics. More specifically, to analyze the relationship among the “5Vs” of Big Data and the propensity to generate patents with Big Data technologies in SMEs, we propose a multinomial probit (Keane, 1992; McCulloch and Rossi, 1994). since our dependent variables (“patents generated through Big Data Technologies”) is a categorical variable (in line with Messeni Petruzzelli et al., 2022). “Patents generated through Big Data Technologies” is subdivided into 4 classes: 1) “no patents”; 2) “1 patent”, 3) “between 2 and 4 patents”; 4) “more than 4 patents”. Then, we introduce as independent the 5 characteristics of Big Data: “Volume”, “Velocity”, “Variety”, “Veracity”, and “Value” which are operationalized according to a 7-point Likert scale. Then, we control for firm characteristics, such as “age”, “revenues”, “size”, and for regional and sectoral effects by introducing the dummy variables “region”, and “high technological sector”.

Results. By performing the econometric analysis, we estimate the likelihood of developing “1 patent”, “between 2 and 4 patents”, and “more than 4 patents” generated through Big Data Technologies with respect to none. Our preliminary analysis shows that “Volume” has a negative relationship for the category “1 patent” and “between 2 and 4 patents”, while it does not have any statistically significant effect on “more than 4 patents”. Then, we find that “Variety” has a positive and statistically significant effect on the category “between 2 and 4 patents”, and “more than 4 patents”. For the variables “Velocity”, “Veracity”, and “Value”, we do not find any statistical support for the three categories of patents, meaning that these Big Data characteristics do not have a statistically significant relationship with developing patents generated through Big Data technologies. We can conclude that we find support for our hypothesis H1 and H3, but not for H2, H4, and H5. The huge volume of data hinders the SMEs’ propensity of developing patents generated through Big Data Technologies, meaning that managing large volumes of data is expensive for SMEs (Cappa et al., 2021). However, managing the diversity of available data and sources improves the SMEs’ innovation performances and helps them maintain a competitive advantage in the market. Hence, SMEs can leverage the

heterogeneity of their data to improve their position in the innovative landscape and gain market power by protecting their intellectual property through patenting.

Research limitations. Our “work-in-progress” is characterized by some limitations. First, the research aims to investigate the relationship between the “5Vs” of Big Data and the propensity to generate patents with Big Data technologies individually, without investigating any internal relationships among the “5Vs”. Second, we focus only on patents with Big Data technologies as the dependent variable, without testing the impact of these patents on business performance. Third, our hypotheses are based on “correlation” between variables, without necessarily investigating “causal” relationships. These three main limitations open up insights for possible future research on the topic. In this sense, further research could find important interrelations between the “5Vs”, their effects on the business performance through patents with Big Data technologies, and “causal” relationships.

Managerial implications. Our work has several implications for SMEs. The “5Vs” of Big Data and their correlation with SMEs’ propensity to generate patents are key elements in ensuring success and competitiveness in today’s business landscape. Companies that understand and fully exploit the potential of Big Data can gain significant advantages and contribute significantly to innovation and economic growth. In this sense, instead of focusing on Big Data “Volume”, “Velocity”, “Veracity” and “Value”, SMEs should focus on improving the degree of “Variety” of Big Data. In this sense, SMEs should invest in the number of sources of big data.

Originality of the paper. The main originality of our “work-in-progress” relies on the fact that, as suggested by Plantec et al. (2023), we focus on data characteristics (i.e., “5Vs”) instead of technology (e.g., artificial intelligence) offering a complementary view of Plantec and colleagues’ work of the innovative activities of the firms. Moreover, the paper contributes to highlight the fact that Big Data are not good by themselves, but there are some “dark side” effects that must be taken into consideration adopting them. In this sense, our research suggests that it is better to rely on “Smart Data” rather than Big Data.

In conclusion, our paper presents counterintuitive findings. First, generally speaking, it is common to think that SMEs can effectively manage and analyze this huge volume of data in order to have a significant competitive advantage. However, our results suggest that higher “Volume” of data can have negative effects on the propensity to generate patents with Big Data technologies. Therefore, SMEs should focus on other “Vs” instead of the first (i.e., “Volume”). Second, in general terms, SMEs that can react quickly to market changes and emerging trends, supported by real-time analysis of Big Data (i.e., “Velocity”), can develop innovative solutions that merit patent protection. However, our research shows that it does not have a significant effect on the propensity to generate patents with Big Data technologies. Third, SMEs that invest in accurate data collection and management (i.e., “Veracity”) can develop solutions based on reliable information, increasing the credibility of their inventions and the likelihood of obtaining patents. However, our results show that it has no significance. Fourth, the concept of “Value” emphasizes the importance of turning data into meaningful information and creating tangible value for the business and customers. However, based on the results of our study, big data patents are not influenced by SMEs’ identification and exploitation of the inherent value of Big Data. Finally, only SMEs that synergistically integrate and analyze these different types of data (i.e., “Variety”) can develop innovative, multidimensional solutions that are patentable. The “Variety” dimension represents the only positive and significant factor for our results.

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How WEIRD is Social Innovation? Exploring the Evolution of Social Innovation Research

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Abstract

This paper examines the extent to which empirical studies on social innovation are conducted in WEIRD (Western, Educated, Industrialized, Rich, and Democratic) countries and authored by WEIRD researchers. Through a systematic literature review, we analyzed 197 empirical research papers published in top-ranked journals in innovation, strategy, and management. We map the evolution of social innovation study locations, finding that the field has become less WEIRD over time. The analysis of articles reveals a trend towards adopting diverse country contexts, including areas previously overlooked such as countries in Africa, Latin America, and Asia. However, research is still predominantly produced by WEIRD researchers located in the United States, United Kingdom, France, and Spain. Additionally, it was found that the Journal of Business Research serves as the primary source for empirical studies within the field of social innovation, encompassing a diverse range of geographical locations in its articles.

Key words: social innovation; WEIRD context; systematic review; place; context

Framing of the research. *Businesses, organizations, and government actors are increasingly called upon to play a pivotal role in addressing these complex issues and focus on their purpose besides profit (Weerawardena et al., 2021). Social innovation has emerged as a key focus area for addressing these complex social problems, such as poverty, inequality, environmental issues, and community problems (Seelos and Mair, 2017; Santos, 2015).*

Defined by Beckman, Rosen, and Painter (2023) as novel processes or products aimed at generating effective solutions to complex social problems for collective benefit, social innovation is intricately tied to specific contexts, social relations, and institutions (Montgomery & Mazzei, 2021). Its rise in scholarly discourse is significant, reflecting a bigger shift towards confronting societal grand challenges—massive global issues spanning social and environmental domains with far-reaching implications beyond national borders (George et al., 2016; Whiteman et al., 2013).

Despite social innovation's emergence as a vital research field aimed at understanding and resolving complex societal issues, neglecting the spatial and contextual nuances can potentially trap the field (Beckman, Rosen, & Painter, 2023). Furthermore, there exists an intriguing tension in scholarly discourse regarding the positive impact of social innovation and its current application across various institutions such as academia, communities, and governments. Notably, articles within managerial settings often lack geographic specificity, with 83.62% of them failing to specify or limit their geographical locations (Beckman, Rosen, & Estrada-Miller, 2023).

Moreover, a comprehensive analysis necessitates examining multiple geographical contexts, rather than solely relying on convenient or WEIRD (Western, Educated, Industrialized, Rich, and Democratic) country data (Henrich, Heine, & Norenzayan, 2010). The term "WEIRD" describes research contexts in social science studies, particularly in experimental behavior research, where findings are often generalized as universally applicable (Henrich, Heine, & Norenzayan, 2010; Pitesa & Gelfand, 2023). As highlighted by Pitesa and Gelfand (2023), much of the scientific knowledge regarding human behavior pertains to WEIRD populations, produced by WEIRD researchers addressing WEIRD problems.

In this puzzle, our goal is to analyze the current state of the research field on social innovation and to what extent empirical studies on social innovation are done in WEIRD (Western, Educated, Industrialized, Rich, and Democratic) countries and carried out by produced WEIRD researchers.

Purpose of the paper. *To clarify this tension, this paper presents results of a systematic literature review that aimed of mapping out the samples where the studies on social innovation are being made, specifically addressing the following research question: "How WEIRD is research in social innovation?". The method involves a systematic review of seven top-ranked journals in the field of innovation and management, resulting in 197 empirical research papers.*

This paper also expects to make several contributions. First, add to the literature an evolutionary analysis of what theories are most often employed in conceptualizing and analyzing social innovation, and how do they contribute to our understanding of its processes. Secondly, analyze the context of social innovation across various geographical locations (place) and understand the development of the focus of the field over the years. Different than the article of Arnett (2008),

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where the researcher analyzed the degree of American and international representation in major journals of the American Psychological Association (APA), this study is focused on the empirical setting in a managerial setting (innovation, management, and entrepreneurship) and institutional (geography, cultural, etc.) These findings will contribute to the context of social innovation in different countries, helping the government and individuals to understand the different relationships. As Alley and Cortina (2023) confirmed that when we imply that the results for the WEIRD sample are going to be the same explanation of the non-WEIRD, the knowledge itself can take a turn about the relationship of the variables.

Methodology. Our methodology for conducting this study was carefully crafted to ensure rigor and comprehensiveness and it was initiated by clearly defining our aims and objectives. A systematic literature review is anchored in common principles guided by a research question and a systematic approach (Gough, Thomas, and Oliver, 2019; Rojon et al., 2021). These principles aim to ensure transparency, explanatory depth, inclusivity, and a heuristic approach, as Baxter, Trott, and Ellwood (2023) outlined.

Our systematic review focused on the academic landscape of social innovation literature, exploring articles from thirteen journals without restricting the publication year. The selected journals, namely *Academy of Management Journal*, *Journal of Business Ethics*, *Journal of Business Research*, *Organization Science*, *Research Policy*, *Administrative Science Quarterly*, *Strategic Management Journal*, *Journal of Product Innovation Management*, *Entrepreneurship Theory and Practice*, *Journal of Business Venturing*, *Strategic Entrepreneurship Journal*, *Journal of Management Studies*, *Business Ethics Quarterly*. The journals were chosen based on the top journals from the Chartered Association of Business Schools (ABS) ranking, with the highest score of 4 on the field of innovation, management, and entrepreneurship and journals with the score 3 in the ranking, where they are also present in the list of Top50 Sources from Financial Times (FT), as *Journal of Business Ethics* and *Journal of Business Research*.

For the source of our study, it was used Scopus, as a renowned multidisciplinary database recognized for its extensive collection of peer-reviewed literature in the realm of social science research (Bartol et al., 2014; Norris and Oppenheim, 2007). Our search strategy within Scopus was centered around the keyword "social innovation," a pivotal concept within our study's domain. We sought articles published in high-quality journals renowned for their adherence to rigorous research standards. Specifically, we included articles where the term "social innovation" appeared in the title, abstract, or as a keyword.

Initially, our search yielded a vast number of articles, totaling 84,473, reflecting the broad scope of the topic. To narrow down our focus and ensure relevance, we applied filters, with a particular emphasis on the selected journals known for their prominence in the field. To further refine our dataset and uphold standards of quality, we implemented a series of three filters in the initial screening stage. Firstly, we exclusively considered empirical studies, encompassing both quantitative and qualitative methodologies. Secondly, we prioritized studies that clearly disclosed the contextual setting, recognizing the significance of understanding the place-specific dynamics of social innovation. Thirdly, we concentrated on articles specifically addressing social innovation, thereby homing in on content directly pertinent to our research objectives.

Following a structured approach advocated by Baxter, Trott, and Ellwood (2023), we meticulously detailed the selection process for articles that did not meet our specified criteria. Our aim throughout this process was to identify papers that explicitly delved into the context and application of social innovation practices, thereby enriching our understanding of this dynamic field. Furthermore, we employed VOSViewer software to gain insights into the nodes and their connections due to its user-friendly capability in transforming data into a visual tool. VOSViewer employs two standardized weights, namely the number and total strength of the links, to be the nodal network visually. This graphical representation aids in understanding the significance and strength of the links (Donthu, Kumar, and Pattnaik, 2020).

Results. This section presents the findings of our systematic review, focusing on analyzing empirical research within the context of social innovation. Initially, we found 792 articles within the selected journals, but only 197 papers met the criteria for empirical research within a specific context.

The articles were published between 1996 and 2023. Notably, over 60% of this research appeared in the last seven years (2017 to 2023), showing a growing interest in the topic. This trend aligns with the observations made by Lind, Kang, Ljung, and Rosenbaum (2022), who, in their analysis of social innovation literature applied to multinational companies, found a similar surge in interest (Figure 1).

Figure 1 - Number of articles published over the years from 1996 to 2023.

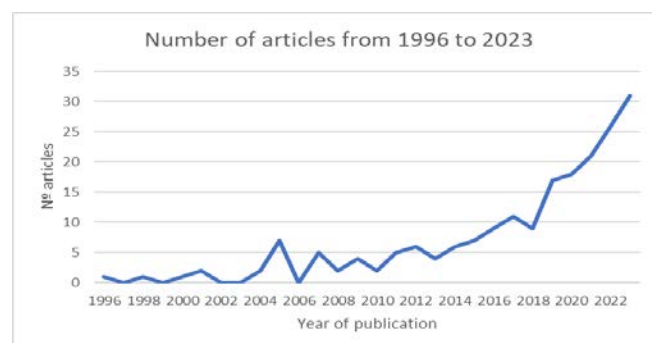
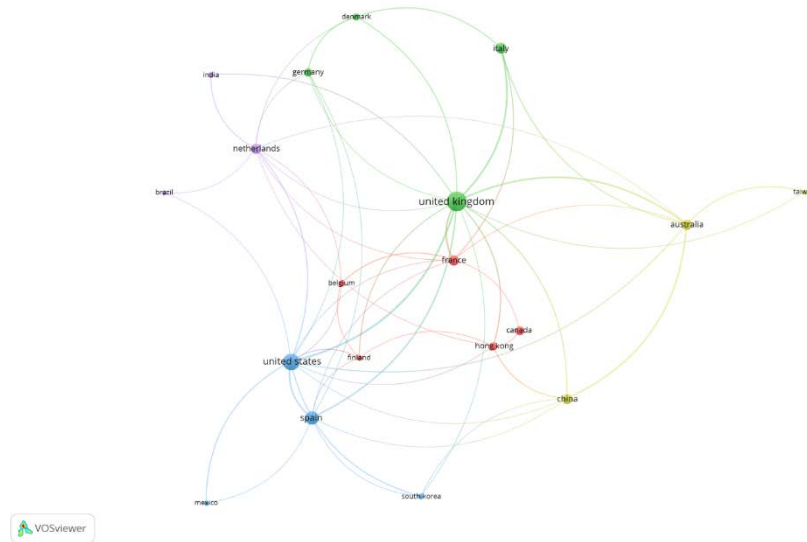


Figure 2 illustrates the central nodes of researchers' countries, generated by VOS viewer with the United States and the United Kingdom occupying central positions. These countries are linked to the results because they are focal points where the context of social innovation articles has been extensively researched and analyzed with a more focused lens. Among the contributors are scholars from Europe (representing the United Kingdom, Netherlands, Spain, Germany, Denmark, Italy, Finland, Belgium, and France), North America (including the United States and Canada), Oceania (with representation from Australia), Latin America only represented by Brazil and Asia (featuring researchers from China, South Korea, India, and Hong Kong).

Figure 2 - Central nodes of researchers' countries.



It is possible to examine the distribution of the research activity in the context of WEIRD within Figure 2, analyzing the country where the research is based. The dominance of the United States and the United Kingdom as the largest nodes aligns with the "WEIRD" characteristics, indicating a concentration of research activity in affluent Western nations with established research infrastructures. Furthermore, the limited participation from countries like Brazil, India, Mexico, and Italy which are typically classified as non-WEIRD or less WEIRD, highlights disparities in research engagement and connectivity. These countries may face challenges in fully participating in the global research community due to factors such as limited resources, access to funding, and research infrastructure. Moreover, non-WEIRD researchers and findings are in a position that they need to engage with WEIRD researchers, while the opposite is not true (Pitesa & Gelfand, 2023).

This analysis underscores the potential bias in social innovation research, where a disproportionate focus on WEIRD countries may skew perspectives and limit the diversity of insights and solutions. Then, from the total of 197 articles, on table 1 it is the breakdown by article per journal, where Journal of Business Research it was the first one, with 72 articles, followed by Research Policy with 53, and Journal of Business Ethics with 28 articles. The Strategic Management Journal had 13 articles, Organization Science, Journal of Business Venturing and Academy of Management Journal had four articles each. And lastly, Entrepreneurship Theory and Practice with three articles. Unfortunately, Administrative Science Quarterly and Business Ethics Quarterly did not have articles that fitted the criteria of choice.

Table 1 - Articles per journal

Journal	Number of Articles
Journal of Business Research	72
Research Policy	53
Journal of Business Ethics	28
Strategic Management Journal	13
Journal of Product Innovation Management	11
Strategic Entrepreneurship Journal	5
Organization Science	4
Academy of Management Journal	4
Journal of Business Venturing	4
Entrepreneurship Theory and Practice	3

As shown in table 1, the Journal of Business Research emerges as a key source. The journal has published 72 relevant empirical articles on the topic of social innovation. The breakdown by region reveals articles analyzing Europe with 28

articles (38.89%), Asia with 20 (27.78%), North America with 7 (9.72%), and 12 in the Group category (16.67%). No articles were found from Latin America (LATAM). Africa and the Middle East contributed 3 and 1 article(s) respectively (4.17% and 1.39%), and Oceania 1 article (1.39%). This distribution could indicate the journal's commitment to diverse perspectives, avoiding an exclusive focus on WEIRD samples. This compromise with diversity can be confirmed with journal website where states "The Journal of Business Research aims to publish research that is rigorous, relevant, and potentially impactful. Recognizing the intricate relationships between the many areas of business activity, JBR examines a wide variety of business decision contexts, processes, and activities, developing insights that are meaningful for theory, practice, and/or society at large."

Table 2 displays the targeted regions and countries in empirical studies. Europe constitutes the primary focus, with 72 articles spanning Spain, Italy, the UK, France, Germany, and others. Asia follows with 41 studies, covering China, India, Vietnam, and more. North America is represented by 35 studies, predominantly concentrated in the United States. The "Group" category comprises 29 studies examining innovation effects across various countries. Africa is explored in 12 studies, while Latin America and the Caribbean feature six studies. Only one study each focuses on Oceania and the Middle East, centered on Australia and Qatar respectively.

North American region is examined, consisting of 35 studies that span the United States, Canada, and Mexico. Notably, within the North American context, there are only nine studies focused on Mexico and seven on Canada, a percentage of approximately 74% of studies only based in the United States setting.

Several common threads appear in the group categories of the articles selected, reflecting a shared focus on the intersection of innovation, business strategies, and societal impact. The studies collectively underscore the increasing significance of human skills, such as creativity and innovation, in the face of digital transformation, emphasizing individuals' pivotal role and capabilities in navigating evolving industries. The exploration of social capital and collaboration on sharing economy platforms further accentuates the importance of human connections in fostering innovation and service advancements. Additionally, the theme of sustainability permeates multiple abstracts, whether it be through examining the integration of corporate social innovations, assessing the sustainability implications of science funding, or finding factors influencing opportunity-driven entrepreneurship that align with sustainable development goals.

Based on the findings across various categories, it is evident that regions characterized as non-WEIRD or less WEIRD include Asia, Africa, Latin America, Oceania, and the Middle East. Focusing solely on studies conducted within these regions, it is apparent that 30.96% of social innovation research is concentrated in these contexts. However, when including studies categorized under the "Group" category, which encompasses multiple regions, this percentage increases to 45.68%, showing a global vision and a comparison between different scenarios.

Table 2 - Categories of countries per quantity of studies

Categories	Countries	Cont
Europe	Belgium, Bulgaria, England, Finland, France, Germany, Hungary, Italy, Netherlands, Norway, Poland, Serbia, Spain, Sweden, Switzerland, Turkey, and the UK.	72
Asia	China, Uzbekistan, India, Vietnam, Taiwan, Hong Kong, South Korea, Nepal, Philippines, Japan, Singapore, Indonesia, Taiwan, Sri Lanka.	41
North America	US, Canada and Mexico	35
Group	Combination of countries	29
Africa	Nigeria, Kenya, South Africa, Tanzania, Sub-Saharan Africa.	12
Latin America	Brazil, Paraguay, Colombia, Chile, Argentina, Nicaragua	6
Oceania	Australia	1
Middle East	Qatar	1

Over the years, there has been a growing interest in diversifying the research scope and the study settings. Currently, studies encompass a broader range of countries, reflecting an expanded global perspective. The articles grouped under this label span from 2013 to 2023, proving a sustained commitment to incorporating diverse contexts and international perspectives in scholarly exploration.

In other words, it is possible to conclude that considering 2005 to 2012, the studies focused on specific locations, such as North America, Germany, Bulgaria. And from 2012 to 2022, it focused on studies with a more complex range of countries, combining different characteristics and specific contexts.

Table 3 - Temporal progression of articles across global regions

	Temporal progression of articles across global regions			
	(1996 - 2002)	(2003 - 2008)	(2009 - 2014)	(2015 - 2023)
Europe	2	6	13	51
Asia	1	1	4	35
North America	2	6	2	25
Group	0	1	5	23
LATAM	0	2	1	3
Africa	0	0	2	10
Middle East	0	0	0	1
Oceania	0	0	0	1

Furthermore, given the significant role of social innovation in addressing both social and environmental challenges, it is pertinent to assess the extent to which academia and literature are dedicated to tackling these issues. The Sustainable Development Goals (SDGs) serve as a comprehensive framework guiding global sustainable development efforts over a 15-year period from 2016 to 2030 (United Nations, 2015). This study provides empirical insights into the prioritization of SDGs within the context of the 2030 Agenda's five fundamental pillars, commonly known as the "5 Ps": People, Planet, Prosperity, Peace, and Partnership. These pillars encapsulate the critical domains necessitating attention to fulfill the agenda's objectives (Barbier and Burgess, 2017).

Out of the 197 articles, the majority fall within the partnership category, encompassing studies that emphasize enhanced global solidarity, tailored to specific needs, and involving the participation of all countries, stakeholders, and individuals, with 74 studies. Followed by prosperity, with 57 studies, with a particular focus on scenarios that can provide people with prosperous and fulfilling lives, generating economic, social, and technological progress occurs in harmony with nature. Then, people with 37 articles, with a particular focus on individual human being and focus on end poverty and hunger, planet with 27, to protect the planet from degradation, including through sustainable consumption and production, sustainably managing its natural resources and taking urgent action on climate change, so that it can support the needs of the present and future generations, and peace with only two articles, to understand on how to foster peaceful, just and inclusive societies which are free from fear and violence, and also understanding more about the politics setting, such as in Zimbabwe and Norway (Table 4).

Table 4 - Classification of articles per SDGs

Classification of articles per SDGs	N•	%
Partnership	74	37.56%
Prosperity	57	28.94%
People	37	18.78%
Planet	27	13.71%
Peace	2	1.02%
Total	197	100%

Analyzing the outcomes of the review and the theories applied to diverse studies on innovation across the years underscores the richness and interconnectedness of the topics, portraying a dynamic research landscape. The array of theories encompasses traditional perspectives such as Schumpeter's and resource-based views (RBV), as well as socio-cultural theories like Social Cognitive Theory, Social Network Theory, and Social Capital Theory. Institutional and behavioral perspectives, delving into aspects like corporate social responsibility (CSR) and stakeholder engagement, have been prevalent.

In recent times, there has been a discernible shift towards contemporary and multidisciplinary theories, reflecting an increased complexity in comprehending and tackling societal challenges. The ascendancy of theories like Dynamic Capabilities, Effectuation, and Social Exchange Theory underscores adaptability, social interactions, and labor relations. The focus on social innovation, circular innovation, and transformative policies signals an enhanced awareness of global challenges. Furthermore, the surge in theories related to entrepreneurship ecosystems, social movements, and co-creation shows a broader and more interconnected approach to innovation.

The integration of theories related to sustainable development, access and benefit sharing, and the framing on the research such as storytelling studies suggests a heightened emphasis on ethical and inclusive innovation. Moreover, attention to the attention-based views of the firm, digital humanism, and mixed methods signifies acknowledgment of the evolving technological landscape and the need for nuanced research methodologies. The exploration of theories addressing hybrid tensions in organizations, social grid approaches, and the societal reminiscence conceptualization shows a deeper understanding of complex organizational dynamics and their societal implications.

In essence, the evolving theoretical landscape reflects an interdisciplinary and globalized approach to understanding and promoting innovation. The transition from traditional perspectives highlights a broader, interconnected view, emphasizing adaptability, sustainability, and social responsibility amid complex and dynamic challenges.

In conclusion, this comprehensive analysis illustrates the global reach and diversity of social innovation research, spanning regions, individual countries, collaborative groups, and continents, contributing to a nuanced understanding of social innovation dynamics worldwide. The analysis of articles reveals that social innovation is becoming less WEIRD over time, with studies adopting diverse country contexts. This diversification enhances knowledge about legitimacy and different regulations globally. Cultural norms can explain why certain beliefs or behaviors are less likely in one country compared to another, but other country-level differences like education, socioeconomic status, and industrialization remain underexplored and offer potential for future research and theorizing (Alley and Cortina, 2023).

Research limitations. While our study offers valuable insights on the social innovation field, such as the evolutionary analysis on the theories utilized in the empirical studies and the analysis of the context of the studies, it is important to acknowledge its limitations. Inherent to our method, particularly in conducting a systematic literature review, are constraints such as the string used for search terms and the selection criteria limited to top-tier and second-tier journals. It is worth noting that variations in search terms could yield different results, potentially broadening the scope of our findings. Other limitations include journal accessibility and the omission of alternative databases that may have returned a different list of articles, but this was overcome using the biggest database, Scopus, with the highest number of journals associated. Despite these limitations, many research areas possess their own distinct journal communities. Thus, focusing solely on top-tier journals could be considered a limitation, as it might overlook less highly rated publications that are nonetheless crucial for the social innovation community. Additionally, this article represents the first exploration of the concept of spatial (geographical) considerations.

Managerial implications. In this article, businesses can benefit from embracing a proactive approach to innovation that encompasses diversity, sustainability, and social responsibility. By leveraging a variety of theoretical frameworks, they can enhance their strategic decision-making processes. Additionally, gaining insights into recent social innovation contexts through research can inform strategic decision-making. This study is also valuable for academia interested in deepening their understanding of the social innovation field.

Originality of the paper. The paper contributes significantly to the discourse on social innovation by comprehensively analyzing empirical studies within the WEIRD (Western, Educated, Industrialized, Rich, and Democratic) context. It addresses the growing interest in social innovation research, particularly concerning its role in addressing societal grand challenges. The paper maps out the locations of social innovation studies by conducting a systematic literature review spanning seven top-ranked journals in innovation, organization, and management. The analysis reveals evolving keyword emphasis over time and a shift towards research in other countries previously overlooked, reflecting changing priorities within the field. Notably, the paper finds that social innovation research is becoming less WEIRD over time, with studies increasingly adopting diverse country contexts, even though the researcher's location is still WEIRD and focused on specific countries such as United States, United Kingdom, France and Spain. The paper contributes by offering an evolutionary analysis of often employed theories, contextualizing research across geographical locations, and understanding the dynamic development of social innovation research.

Furthermore, the paper addresses the tension in scholarly discourse about the positive impact of social innovation and its application by scholars, communities, and governments. By employing the acronym WEIRD, the paper scrutinizes the nature of researchers and the context of their studies. Through a systematic review method, it analyzes 197 empirical research papers and supplies insights into the geographical distribution of social innovation studies. The findings reveal a shift in focus from specific locations to a more complex range of countries, reflecting a broader global perspective. The paper also contributes by offering insights into the theories applied in social innovation research, highlighting a transition from traditional to contemporary and multidisciplinary perspectives. Overall, the paper enhances understanding of social innovation dynamics worldwide and underscores the importance of considering diverse contexts in addressing societal challenges and promoting positive societal outcomes.

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Open Innovation search strategies and Innovation performance: differential moderating effects of Big Data Characteristics

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Abstract

This extended abstract examines the relationship between open innovation search strategies (breadth and depth) and innovation performance in SMEs. Specifically, it invokes a big data perspective to propose the differential moderating effects of four dimensions of big data characteristics, namely big data volume, variety, velocity, and veracity. Based on a sample of Italian SMEs, our statistical analysis intends to show the positive combinative effects of some big data characteristics and open innovation breadth on radical innovation outcomes and those of other big data characteristics and open innovation depth on incremental innovation outcomes. The findings of differential moderating effects underscore the need to assess the boundary conditions within which OI positively impacts on innovation outcomes. Additionally, they provide valuable insights to managers regarding the significance of big data characteristics in enhancing innovation outcomes through OI strategies.

Key words: open innovation; incremental innovation; SMEs; big data; Italy

Framing of the research. Since Chesbrough's seminal work in 2003, open innovation has increasingly captured the interest of both scholars and practitioners (Bogers et al., 2017; Dahlander et al., 2021), particularly in the domain of R&D management (Ferrigno, Crupi, Di Minin, Ritala, 2023). Open innovation facilitates firms in sourcing external ideas and resources, collaborating on the development of new products and processes with external partners, and leveraging internal ideas that deviate from the firm's current business model (Enkel et al., 2009; Ferrigno, Del Sarto, Cucino, & Piccaluga, 2022; Messeni Petruzzelli et al., 2022: 617), thereby influencing both financial and non-financial performance (Carrasco-Carvajal et al., 2023; Martín-Peña et al., 2023).

A significant focus lies on firms' search strategies within open innovation (Greco et al., 2015; Sà et al., 2023), with established literature supporting the concept of two distinct open innovation search strategies: (1) open innovation breadth, which denotes the number of sources utilized for innovation; and (2) open innovation depth, indicating the level of involvement of these sources in the innovation process (Laursen and Salter, 2006; Messeni Petruzzelli et al., 2022). Both these strategies shape firms' propensity towards acquiring external knowledge (Garriga et al., 2013; Laursen and Salter, 2006) from various sources, including suppliers, customers, competitors, financial institutions, consulting firms, other private enterprises, universities, research centers, and public organizations (Messeni Petruzzelli et al., 2022). Existing literature has shown that open innovation search strategies affect firms' innovation performance (Cruz-González et al., 2015; Del Sarto et al., 2023; Greco et al., 2016; Henttonen et al., 2011). However, within the contemporary landscape, the proliferation of big data inundates the global sphere incessantly, with its growth trajectory expanding approximately tenfold every quinquennium (Del Vecchio et al., 2018; Hendrickson, 2010; Hilbert & López, 2011). Characterized by datasets of vast proportions that would necessitate significant storage capacities and temporal investments for analysis under conventional systems (Kaisler et al., 2013; Ward & Barker, 2013), big data assumes paramount importance as a pivotal competitive advantage and strategic resource, particularly discernible within the milieu of SMEs (Del Vecchio et al., 2018). In this regard, research has shown that big data may affect open innovation search strategies (Del Vecchio et al., 2018; Ferrigno, Barabuffi, Marcazzan, Piccaluga, 2023). Other scholars found that big data can also bring firms to improve their innovation performance (Ferrigno, Marcazzan, Barabuffi, Piccaluga, 2024; Johnson et al., 2017). Taken together, these streams of literature suggest that big data might play a role in the relationship between open innovation and incremental innovation in SMEs. However, scant research has analyzed whether the relationship between open innovation and incremental innovation is moderated by big data.

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Purpose of the paper. *Our paper aims at covering this gap by unveiling what v of the big data can play a moderation effect on the relationship between open innovation and incremental innovation. Big data is a multifaceted concept (Cappa et al., 2021). Thus, this study we refer to the most used characteristics of the big data (also known as 4Vs, see Ghasemaghaei & Calic, 2019): volume (i.e., the amount of data collected); variety (i.e., the assortment of data collected per observation); velocity (i.e., the speed of generating and analyzing data), and veracity (i.e., the reliability and insightfulness of data) (Cappa et al., 2021). Adopting these dimensions, we explore the following research question: what is the moderating effect of the volume, the variety, the velocity, and the veracity of big data on the relationship between SMEs' open innovation and innovation performance?*

To address this research question, we will follow recent studies that have investigated moderating effects around the relationship between open innovation and firm's innovation performance (Cruz-González et al., 2015; Ovuakporie et al., 2021). More specifically, we will firstly hypothesize that the relationship between open innovation search strategies (breadth and depth) and innovation performance (radical and incremental) is positive. After we will assume that some big data characteristics can moderate positively this relationship while others moderate it negatively.

Methodology. *To test our hypotheses, we will gather evidence on the adoption of Big Data from the perspective of SMEs at the individual firm level. To ensure internal validity, we have chosen the Italian context, aiming to control for normative environment, contextual munificence, and entrepreneurial opportunities (Beckman & Burton, 2008). Italy is characterized by a significant prevalence of SMEs, employing over 90% of the national workforce (Cucino et al., 2024; ISTAT, 2022). According to a study by the Italian Ministry of Economic Development (MISE, 2020), Italy demonstrates a notable percentage of firms transitioning towards Industry 4.0. Over the last decade, the Italian Government has initiated numerous plans and interventions to stimulate firms' digitalization and the adoption of Industry 4.0 technologies, including Big Data. Therefore, given Italy's distinctive economic structure primarily based on SMEs and recent national policies aimed at accelerating digitalization, Italy provides an intriguing setting to explore SMEs' behaviors concerning the adoption of Big Data (Martinelli et al., 2021).*

To construct our sample, we will utilize the Italian website "registroimprese" to identify companies involved in developing Big Data technologies. A preliminary search on this website yielded an initial sample of 4357 companies. Since our focus is primarily on analyzing the moderating effects of big data characteristics on the relationship between open innovation search strategies and SMEs' innovation performance, we will narrow down the sample by selecting companies with fewer than 250 employees and a turnover below €50 million (Messeni Petruzzelli et al., 2022). Subsequently, we will employ the Orbis database to access the email addresses and main contacts of these companies. Additionally, we will manually search companies' websites for data that cannot be downloaded. We intend to reach out to the selected Italian SMEs and distribute an online structured questionnaire to be completed by their CEOs or founders. Our objective is to gather more than 150 responses to facilitate a quantitative analysis of the moderating effects of big data characteristics on the relationship between open innovation search strategies and SMEs' innovation performance.

We will test the hypotheses by running several OLS regressions in which the dependent variable is represented by incremental and radical innovation, while the main independent variables are represented by open innovation breadth, open innovation depth and 4Vs of big data. Moreover, the main focus of our analysis is understanding the moderating effect of big data characteristics on open innovation strategies, hence we introduce interaction terms among our main independent variables.

As regards the dependent variables (radical and incremental innovation performance), we will follow the methodologies outlined by Subramanian & Youdt (2005) and Mikalef et al. (2019) and assess radical and incremental innovation using a three-item, 7-point Likert scale through elaborating specific questions that capture these concepts. For the regression analysis, we consider the average score of the multiple responses.

Regarding the operationalization of variables, we will follow the measures used in previous studies on Open innovation search strategies (Messeni Petruzzelli et al., 2022, based on Laursen and Salter, 2006). The explanatory variables of open innovation search strategies (namely (1) open innovation breadth, which denotes the number of sources utilized for innovation; and (2) open innovation depth, indicating the level of involvement of these sources in the innovation process (Laursen and Salter, 2006; Messeni Petruzzelli et al., 2022)) will be computed as it follows. Firstly, we will operationalize open innovation breadth as the count of sources (including suppliers, customers, competitors, financial companies, consulting companies, other private companies, universities, research centers, and other public organizations) collaborating with the SMEs to foster innovative activities. Secondly, open innovation depth will be operationalized as the count of sources with which the firm collaborates "very often" (Messeni Petruzzelli et al., 2022). The variables are computed by summing the number of sources and the number of sources with which a firm collaborates "very often". Consequently, their value ranges between zero (indicating no collaboration, minimum) and eight (maximum), and we will treat Open innovation search strategies as categorical variables.

To gauge the "4Vs" of big data, we draw upon insights from prior research on big data characteristics. Consistent with the approach outlined by Johnson et al. (2017) and Ghasemaghaei & Calic (2020), we evaluate "big data volume," "big data velocity," and "big data variety" using a 7-point Likert scale, ranging from 1 ("strongly disagree") to 7 ("strongly agree"). Conversely, to operationalize "big data veracity," we rely on the work of Ghasemghaei (2021). The Likert scale allows us to assess the extent of data collected ("big data volume") (Cappa et al., 2021), the diversity of data per observation ("big data variety") (Cappa et al., 2021), the pace of data collection and analysis ("big data velocity") (Ghasemaghaei & Calic, 2020), and the reliability of data collection and analysis ("big data veracity") (Ghasemaghaei, 2021). The measures of "big data volume" and "big data velocity" comprise 4 items each, while those of "big data

variety” and “big data veracity” consist of 3 items. Specifically, for the regression analysis, we consider the average score of the multiple responses.

Furthermore, consistent with previous studies, our model will include the following control variables: (1) whether the SME operates in a high-tech industry or not (Messeni Petruzzelli et al., 2022), (2) the SME's age (Kelly & Amburgey, 1991), (3) the SME's size (Arbore & Ordanini, 2006; Horváth & Szabó, 2019), (4-5) the SME's potential and realized absorptive capacity (i.e., the R&D expenses on total revenue and the number of patents in the last 10 years; see Cassetta et al., 2020; Zahra & George, 2002), and (6) the digital skills of the SME's human resources (measured as the percentage of employees with a STEM degree; see Agostini & Filippini, 2019; Eller et al., 2020; Giotopoulos et al., 2017; Horváth & Szabó, 2019).

Results. In general, we expect that big data characteristics will moderate the relationship between open innovation search strategies and innovation performance. However, taking into consideration the different *v* of big data (volume, variety, velocity, and veracity) and also the open innovation search strategies (breadth and depth) we also expect that the magnitude of these moderating effects could be different. In particular, we anticipate that some big data characteristics are more important than others in enhancing/downgrading the impact of open innovation breadth/depth on SMEs' incremental/radical innovation.

Research limitations. Although this extended abstract may contribute to our understanding of big data characteristics as moderating variables that affect open innovation search strategies and SMEs' innovation performance, many limitations should be taken into consideration. First, we identified the open innovation search strategies for our study based on the framework established by Messeni Petruzzelli et al. (2021; which is based on Laursen and Salter, 2006). However, we recognize the existence of other open innovation conceptualizations such as those highlighted in different studies that we have not included in our questionnaire. For example, Gassmann et al. (2010) adopt a 'process perspective,' categorizing these practices into inbound, outbound, and coupled OI processes; while Spithoven et al. (2013) suggest four open innovation practices, such as (1) search for external sources of innovation, (2) the acquisition of external R&D, (3) the use of collaborative innovation partners and (4) the exploitation of available IP protection mechanisms. Future research could replicate our methodology while also considering alternative open innovation conceptualizations identified in other studies.

Second, we have scrutinized the relationship between open innovation search strategies and innovation performance and the moderating role of Big Data characteristics within a highly specific setting: Italian (SMEs) listed on the Italian website “registroimprese”. We acknowledge the limited generalizability of our findings to this particular organizational category operating within the confines of this specific national context. Future investigations could explore the moderating effects of big data on open innovation impact on SMEs innovation performance across diverse geographical locations. Moreover, while our study primarily focuses on SMEs, forthcoming research could also examine these relationships on a broader spectrum of enterprises, encompassing established firms, larger corporations, and startups alike.

Third, in this study we analyzed the moderating role played by the most explored *v* of big data. However, other unexplored dimensions of interest in big data involve variability in data flow, acknowledging the inconsistencies within datasets (Katal et al., 2013), and the realm of big data visualization, which concerns organizations' ability to formulate pertinent inquiries to extract meaningful value from their big data initiatives (Simon, 2014). Future research endeavors could delve into these dimensions of big data to gain a more comprehensive understanding of how they influence open innovation impact on SMEs' innovation performance.

Managerial implications. The expected findings might have implications for managerial practices. More specifically, we emphasize that a more cooperative and collaborative relationship between SMEs and other organizations may facilitate their innovation performance, which is fundamental for those companies that are facing organizational and business challenges that contain their future growth. In general, we expect that open innovation search strategies may allow SMEs to increase their radical and incremental innovation performance. More specifically, we highlight that the magnitude and the path that explain this relationship could be different, depending on the *v* of big data.

Our research holds potential significance for policymakers as well. Specifically, we aim to demonstrate the importance of policymakers supporting firms in developing tools for analyzing big data. These tools offer valuable insights that facilitate interactions among firms, enabling the exchange of knowledge crucial for enhancing their innovation performance. Therefore, our study underscores the importance of policymakers fostering an environment conducive to the development and utilization of big data analysis tools, ultimately contributing to improved innovation outcomes within firms.

Originality of the paper. The main originality of the paper relies on its focus on the moderating effects of big data characteristics on the relationship between open innovation search strategies and innovation performance. Theoretically speaking, our study could suggest important and peculiar dimensions of big data that may increase or decrease the effect of open innovation search and breadth strategies on SMEs' radical and incremental innovation. Practically speaking, our study can be used not only by SMEs' owner-managers, but also by policymakers in order to promote policies in favor of more cooperative and collaborative behavior in the SMEs' ecosystem by leveraging Big Data.

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The role of digital platforms in the university exchange of knowledge: the case of Knowledge Share

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Abstract

The concept of digital platforms, from an Open Innovation (OI) perspective, has been a fairly important topic to study in all its characteristics in recent years. This is because OI platforms promote continuous interaction and greater participation between all parties involved, having a significant importance in intermediation between businesses and universities. Open Innovation Digital Platforms (OIDPs) can be considered a specific type of Open Innovation Intermediaries, taking a central role in stimulating, creating and maintaining an ecosystem of successful innovation through continuous interaction and participation between all parties involved. The work intends to investigate the role assumed by an OIDP in the process of exchanging knowledge between the world of research and business, which is increasingly demanding from a technological point of view. We use the case study methodology based on semi-structured interviews. The results underline that the main role of the platform is that of a "bridge" in the process of exchanging knowledge between the world of research (universities, public research centers and private individuals) and companies that move within the environment in which they operate to interface with entities that can design, develop and supply the technology they request. This work records, on the one hand, the limitations of a qualitative analysis based on case studies, on the other, it provides practical and theoretical implications, making an important contribution to the relevant research line.

Key words: *Open Innovation; Open Innovation Intermediary; Open Innovation Digital Platform; Knowledge; Competences.*

Framing of the research. *In recent times, the concept of digital platforms has become increasingly relevance for scholars and managers (De Falco et al., 2017; Hossain and Lassen, 2017). Platforms can be defined as "a set of people, processes, interfaces and artefacts, whose engagement design offers environments of interactions that intensify the actions of agents in creating value" (Ramawamy and Ozcan 2014, p. 34).*

The main focus of past studies has been to investigate how digital platforms, with their advanced web tools and technologies, can open up new ways for organizations to collaborate with external sources to acquire and develop ideas, technologies and knowledge (Hossain and Lassen, 2017). Indeed, digital platforms represent "an important vector for the search for external knowledge" (Hossain and Lassen, 2017, p. 55) and, consequently, for activating new combinations of knowledge and creating new and useful solutions to innovation problems. They enable organizations to bring globally distributed knowledge to solve problems that organizations cannot solve internally on their own (e.g. Jeppesen and Lakhani, 2010).

In digital platforms, the heterogeneity of knowledge stimulates innovation because digital platforms tend to attract complementary innovators (Boudreau, 2010).

Although a significant stream of literature has focused on studying the dynamics of two-sided platforms (Rochet and Tirole, 2003; Economides and Katsamakas, 2006; Hagiu, 2009), OI platforms - a specific type of two-sided platform - (De Falco et al., 2017) represent a less investigated area. In this regard, OI platforms can be understood, essentially, as useful mechanisms for matching solution seekers on the one hand with potential solvers on the other (Eisenmann et al., 2006). This is because OI platforms promote continuous interaction and greater participation between all parties involved. For this reason, OI platforms have "a far-reaching impact on how actors collaborate and innovate together across networks, alliances and business ecosystems. These platforms can be described as virtual environments where heterogeneous entities (e.g. experts, specialized companies, users, R&D laboratories, universities, etc.) are involved in knowledge transfer and integration processes to solve OI challenges (Sawhney et al., 2003; Jeppesen and Lakhani, 2010). This is related to the idea that Open Innovation (OI) approach suggests that companies can respectively use knowledge

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inflows to accelerate their internal innovation processes and knowledge outflows to expand their markets, making available knowledge, intellectual property rights (IP) and/or patents to help partners innovate (Chesbrough, 2006).

Given that Open Innovation Intermediaries (OII) use digital platforms to support OI processes, OIDPs can be considered a specific type of OII, taking a central role in stimulating, creating and maintaining a successful innovation ecosystem (Sieg et al., 2010).

An OII is defined as an “organization [...] that provides a supporting role for collaboration between two or more parties during various phases of the innovation process” (Howells, 2006, p. 721), and such organizations have been recognized as being central to implementing and maintaining a successful innovation ecosystem (Sieg et al., 2010; De Silva et al., 2018). In this sense, these organizations are able to act as knowledge repositories, encouraging new combinations of knowledge (Howells, 2006). Although past research has extensively studied the roles and contributions of OIIs and OIDPs, there are no studies investigating the role that these intermediaries assume in the interaction between the world of research and businesses.

OIIs support and are involved in the management and integration of the knowledge base of innovation ecosystems (De Silva et al., 2018). In this context, OIDPs perform tasks ranging from connecting a wide variety of parties for collaboration to building and brokering relationships and bridging a wide range of gaps in knowledge, competences and capabilities (Sieg et al., 2010; Agogue et al., 2013; Mele and Russo-Spena, 2015; Aquilani et al., 2016; De Silva et al., 2018). They can be observed as “an important vector for external knowledge seeking” (Hossain and Lassen 2017, p. 55) and for activating valuable combinations of internal and external knowledge sources with the aim of facilitating the flow of collaboration and sharing knowledge to innovation problems (Aquilani et al. 2016).

Specifically, this type of digital platforms involves the following subjects: platform leaders; actors on different sides of the platform; insert suppliers into the platform leader; and other bodies and institutions that interact with or influence the value and development of a multi-sided platform (Abbate et al., 2021). In this regard, the leader of a platform must design the governance structure, and therefore its own business model of its ecosystem, defining which parties can access and how they can do it, how open the platform is to external suppliers for creating products /services, how the parties can interact, and what the structure of the interactions between the parties on the different sides of the platform is (Abbate et al, 2021; Baglieri et al., 2018).

Purpose of the paper. In recent years the OIDP phenomenon has been increasing, becoming a suitable opportunity to facilitate and support knowledge creation and sharing processes and to improve innovation paths (Abbate et al. 2021). In particular, these platforms can allow organizations to explore suitable external opportunities for new ideas, knowledge and solutions with the involvement and participation of a broad set of external knowledge, decreasing the distance between ecosystem actors. However, despite the rapid accumulation of research contributions on OIDP, as well as the growing relevance of this phenomenon for knowledge sharing and open innovation processes, the number of studies investigating the role of these platforms in the dissemination of knowledge and expertise are still scarce.

For this reason, this work intends to investigate the role assumed by an OIDP in the process of exchanging knowledge and competences between the world of research and the world of business, which is increasingly demanding from a technological point of view.

Methodology. Taking into account the novelty of the phenomenon to be investigated and the inductive nature of the research questions, this study adopts a qualitative method, based on a case study of the digital platform “Knowledge Share” (KS), which allows the exploration of the phenomenon object of this work in its context, using a wide range of data sources (Yin, 2003). This platform was born in the Polytechnic of Turin as a showcase of all the patents developed in the university, to clearly and simply expose all the advantages and the brief description of the technologies covered by the patents. Subsequently, having the need to extend the project to an Italian level, wanting to involve all Italian universities and research centres, KS undertook a close long-lasting collaboration with Netval, creating a network of all the technology transfer offices relating to each associated body. This has allowed us to increase the number of patents included in the platform. Afterwards, for a correct application of patent legislation, and with the need to support inventors in the long patent registration process, KS collaborated and is still collaborating with the Italian Patent and Trademark Office (UIBM).

To carry out the analysis, semi-structured interviews were carried out with KS top management. Information derived from the interviews was triangulated with secondary data, following the recommendation of Eisenhardt (1989). Triangulation of different data sources has been used to mitigate the risk of informant bias, control individuals' subjective judgments, and thus increase construct validity (Gibbert et al., 2008).

Results. Knowledge Share Platform (KS) is a joint project of the Ministry of Business and Made In Italy - Patent and Trademark Office (MIMIT - UIBM), Netval Association and Polytechnic of Turin, which aims to represent for Italian companies the meeting point with the knowledge developed by university research and Research Centers, which can be the subject of concrete application. To date it is the largest national platform dedicated to the valorization of public research. The portal was created with the aim of making information available in a clear and understandable way relating to projects that represent the excellence of the scientific know-how of Italian Universities and Research Centres, in order to resolve the main critical issues linked to the technological transfer and to provide a consolidated tool to channel and simplify interactions between the world of research, businesses and investors. Access is free and open to all large companies, SMEs, investment funds, accelerators and incubators in Italy and abroad and requires registration. By registering on the platform, users will have the opportunity to interact with the project team, access content relating to published projects, send contact requests for technologies and realities of interest to them from which possible collaborations and synergies may arise. The KS 2.0 platform renews the objective of optimizing the contact between

Research and the entrepreneurial fabric but with new and constantly updated user experience and content. In fact, among the great innovations, the patents section has been joined by those of Start-Ups and Spin-Offs: an implementation of great importance especially for the world of current innovation. Not only that, to make it easier for the user to search for projects, KS 2.0 uses AI to improve the "match" between what they are looking for and the projects present on the platform. In addition to further implementations of the platform, the goal of the KS project is to be able to replicate the KS 2.0 platform model internationally through scalable and replicable projects. An arrival point that we are working towards to generate impact through a real ecosystem, in addition to the one that already exists thanks to the KS community in Italy. Knowledge Share has been recognized as best practices by the European Union.

We can say that the KS platform plays a "bridge" role between the world of research and businesses. It is placed in an intermediate position in the process that goes from the birth of innovative ideas by the research world, the subsequent effective application that leads to the birth of a usable technology and the business world which, not having internally the knowledge and competences to develop a certain technology, they look externally (in the platform) for the right technology developed by research centers, spin-offs and start-ups, which they can apply in their own business.

Therefore, KS mainly acts as a "facilitator" of interactions between researchers and entrepreneurs, promoting technology transfer.

Research limitations. This work is affected on the one hand, by the main limitations of a qualitative analysis based on a single case study, on the other hand, it offers ideas both at a theoretical and managerial level for both sides of the platform, the world of research and the world of businesses. The main limitation focused on the analysis of a single case study, therefore, to have a clearer understanding of the role that OIDs have in the field of technological transfer between the world of research and the world of business, it would be useful to analyze other similar platforms to identify points of similarity and points that differentiate them from each other.

Managerial implications. The study highlights that OIDs can effectively help companies that intend to open their organizational boundaries and develop new ideas and solutions with the involvement and participation of external knowledge sources, facilitating and supporting the entire open innovation process.

On the business side, therefore, it is increasingly advisable to open one's horizons by investing in new opportunities emerging from the external environment, increasingly looking for new and innovative technologies that can improve both one's offering to the public and make one's processes more efficient, productive, minimizing their environmental impact, migrating towards a more sustainable vision of doing business by innovating.

On the other hand, from the side of innovation intermediaries, and therefore of OIDs, managers are advised to organize training and knowledge dissemination events much more frequently, at close intervals, which allows companies to come more easily aware of interesting projects that can help them develop useful technologies for their business, thus encouraging an increase in the need to protect their intellectual property with patents or otherwise.

Originality of the paper. The study represents a step forward in the line of research that deals with open innovation through digital platforms, analyzing the role that these platforms can have in the process of technological transfer between the world of research (universities, public research centers and private individuals) and the business world, not having internally the knowledge and competences necessary to develop technologies useful for their business.

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The measure of digital maturity

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Abstract

Starting from the definition of the concept of “digital maturity”, the research describes its measurement through: a qualitative-quantitative metric which determines the rating of the company to be examined through measurements; a theoretical measurement model applicable to the generality of companies and based on computational algorithms adaptable through parameterization and weighting mechanisms to any reality.

The research focuses on models aimed at identifying an evolutionary path towards the full digital maturity of a company (digital transformation roadmap or “digital transformation”).

Finally, the concrete applications of the approach are described.

Key words: digital maturity assessment, digital transformation

Framing of the research. The models can be distinguished into two types depending on the objective they set and the data they examine: those independent of the economic sector of the company and those specific to a particular economic activity. The former is used for investigations into the digital maturity of a geographical area or an economic sector, and its evolution over time. Consultancy firms use the second type of model to provide companies and administrations with a “snapshot” of their digital maturity and identify the consequent evolutionary path towards full digital maturity (this process is commonly defined as “digital transformation”). Digital transformation requires effective change management, of which measuring results through a well-defined methodology is an indispensable condition.

The paper describes the conceptual model that underlies these approaches, defining the main concepts, highlighting the phases and mechanisms of the measurement process, and finally illustrating the concrete applications. The following definition of “digital” will be adopted below: **The term digital indicates a set of “items” (technologies, organizational solutions and knowledge management systems) that allow the company to exploit information to make operational and decision-making processes more effective and timelier.** The triad of process categories enumerated heretofore, namely technologies (TECH), organizational solutions (ORG), and knowledge management systems (KNOW), when collectively contemplated, assumes paramount significance in shaping the digital orientation of a corporation. This composite amalgamation of TECH, ORG, and KNOW is posited to bestow substantial advantages across diverse dimensions, including but not limited to growth potential, competitive process, focalization on customer/user interests, operational efficiency, adaptability, innovativeness, prognostic acuity, and the augmentation of overall quality. A list of items that can be traced back to the definition of digital is the following:

Category	Digital item	Type
Basic computer systems	Management/operational system	ORG
	Reporting system	ORG
	Internal/external microservices	TECH
Innovative digital technologies	Data platform	TECH
	Robotic process automation	TECH
	Artificial intelligence	TECH
	Machine learning	TECH
	Blockchain/Distributed ledger technology (DTL)	TECH
	Internet of things	TECH
	Wearable devices	TECH
	Business analytics	TECH
	Quantum computing	TECH
	Cybersecurity	TECH
	6G Network	TECH
	Cryptocurrencies	TECH
Digital asset	TECH	

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	<i>Fintech</i>	<i>TECH</i>
	<i>Demographic changes</i>	<i>TECH</i>
	<i>Technologies enabling smart working</i>	<i>TECH</i>
	<i>Metaverse</i>	<i>TECH</i>
	<i>Generative AI</i>	<i>TECH</i>
<i>Change management</i>	<i>Communication plan</i>	<i>ORG</i>
	<i>Training</i>	<i>KNOW</i>
	<i>Operative model</i>	<i>ORG</i>

Rutkowski states: “**Digital maturity** is the ability to quickly respond to or exploit market opportunities based on current technology stacks, people resources and digital technology. A company can undertake digital transformation not only from the point of view of digital technology but on an overall level, including people, culture and processes”. While there is a strong emphasis on technology, a company’s level of digital maturity is also influenced by its speed of response to change and adaptability, mainly due to human capital and automated processes. Finnis defines digital maturity as “an institution’s ability to use, manage, create and understand digital, contextually (suited to its specific environment and needs), holistically (involving vision, leadership, process, culture and organization) and proactive (constantly aligned with the mission of the institution)”. The Boston Consulting Group defined digital maturity as “the measure of a company’s ability to create value through digital”. As a summary of the above discussion, the following definition is proposed in this work: “**Digital maturity measures a company’s ability to seize all the opportunities offered by digital technologies, organizational solutions and skills**”. The research converges on an approach to **digital maturity assessment based on a scale of numerical values** associated with a series of levels, representing a progressive graduation of standard conditions (usually five or six). Each level corresponds to a description of the organization’s situation, examining the presence and use of digital items in its processes. Some examples of models are: the one commissioned by Impulse, a foundation of the German Engineering Association, and conducted by IW Consulting (a subsidiary of the Cologne Economic Research Institute) and the Industrial Management Department of Aachen University; the European initiative Industry 4.0, the model created by the German National Academy of Sciences and Engineering (Acatech); the digital maturity model produced by Google and the Boston Consulting Group; the Deloitte’s Digital Maturity Model, which takes into consideration the five dimensions of the company (customers, strategy, technology, operations, organization-culture), provides a rating on four levels. In summary, the following general definition is proposed: “**A company’s digital maturity is measured according to a Digital Maturity Score (DMS), a multi-level index derived from a series of surveys carried out on all components of the company. The DMS can take values between 0 and L. The numerical scale represents a graduation of digital maturity from low to higher maturity levels**”. In the remainder of the work, the digital maturity measurement scale is proposed, divided into five levels (L=4) reported in following scheme. In the authors’ opinion, the scale represents a good summary of what is proposed in the literature, ensuring a sufficient balance between the need for synthesis and the need for detail that a measurement scale must have.

<i>Digital maturity level Digital Maturity Score (DMS)</i>	<i>Description</i>
<i>0 – Zero</i>	<i>The company needs digital systems to support its operations.</i>
<i>1 – Initial</i>	<i>Business processes are carried out through the partial support of digital applications but still need to be automated.</i>
<i>2- Intermediate</i>	<i>The company began investing in innovative technologies, and some processes were automated. Digital transformation, however, only affects some business areas.</i>
<i>3 – Consolidated</i>	<i>The digitalization plan has been extended to multiple business areas, and the company has automated all core and support processes.</i>
<i>4 – Competitive</i>	<i>The company has integrated automated processes with solutions for data analysis and with a specific governance model. Digital transformation is fully assimilated into corporate culture.</i>

Purpose of the paper. This work aims to build a new theoretical measurement model applicable to the generality of companies and based on computational algorithms adaptable to any reality through parameterization and weighting mechanisms. The paper describes the conceptual model that underlies these approaches, starting from the definitions of the main concepts, highlighting the phases and mechanisms of the measurement process and finally illustrating their concrete application.

The Digital Maturity Measurement DMM of a company is a process aimed at defining the overall numerical value of the company’s DMS. It is based on the comparison between the observations made on the company and what is predicted by the digital maturity model adopted. The maximum value of the DMS represents the existence of all the conditions foreseen by the model. The partial overlap of real situations with what the model predicts for a given level gives rise to DMS values intermediate between 0 and the maximum value L. The DMM process will involve individual parts of the company, and the overall DMS of the company will be a weighted average of the partial DMS.

Methodology. A DMM process is divided into the following steps:

Step 0. Preliminary requirements.

i) Subdivision of the company into elementary parts

In models oriented towards specific economic activities, the choice of classification of the observation areas reflects

the characteristics of the company's organization and directs the data collection activity. The classifications can be traced back to a tree diagram which at the first level presents the distinction proposed by Eurostat between core business and support functions: **core business functions** are the activities of a company that produce income, i.e. the production of final goods or services intended for the market or on behalf of third parties; **corporate support functions** are accessory activities carried out by the company in order to allow or facilitate the main corporate functions and its production activity; the outputs of the corporate support functions are not themselves destined directly to the market or to third parties. Starting from this definition, sublevels can be created that gradually descend into more and more detail of the organizational morphology of the company. The table below presents a possible organization of company functions on three levels. That classification allows the value of any variable to be uniquely assigned to a part of the company by identifying it through three subscripts *a*, *b* and *c* (where $a = 1, \dots, A$; $b = 1, \dots, B_a$; $c = 1, \dots, C_{a,b}$) organized in a hierarchical way, where the subscript of a given level depends on the subscripts of the higher level. Thus, concatenating the three subscripts *a*, *b*, and *c* uniquely identifies a firm's elementary part (or leaf). We denote with

$$z_{a,b,c}$$

The value of variable *z* for the part *a*, *b*, *c* of the company.

If one wanted to organize the functions of a company on four hierarchical levels, it would suffice to introduce the subscript *d* where $d = 1, \dots, D_{a,b,c}$. Alternatively, if one wanted to describe the company only on two hierarchical levels, subscripts *a* and *b* would be considered.

First level Subscript <i>a</i>	Second level Subscript <i>b</i>	Third level Subscript <i>c</i>	
CORE OPERATIONS PROCESSES	LOGISTICS	HANDLING OF MATERIALS AND PRODUCTS	
		ORDER MANAGEMENT	
		STORAGE	
		MANAGEMENT OF RETURNS TO SUPPLIERS	
		MANAGEMENT OF SUPPLY VEHICLES	
	PRODUCTION	PRODUCT PROCESSING	
		CREATION AND PACKAGING	
		ASSEMBLY	
		PRODUCT TESTS	
	DISTRIBUTION	QUALITY CHECK	
		PRODUCTS DISTRIBUTION	
	POST-SALE	INSTALLATION REPAIR AND SUPPLY OF PARTS	
		TRAINING FOR USE	
CUSTOMER SERVICE			
SUPPORT PROCESSES	RESEARCH AND DEVELOPMENT	RESEARCH AND DEVELOPMENT	
	ADMINISTRATION	ACCOUNTING AND BUDGETARY	
		TAXATION	
		PERSONNEL MANAGEMENT	PERSONAL RESEARCH
	PERSONNEL MANAGEMENT	DISMISSALS	
		RECRUITMENTS	
		TRAINING	
		REWARDS AND SALARY	
		CORPORATE INFORMATION SYSTEMS	MAINTENANCE AND ICT SUPPORT
	CORPORATE INFORMATION SYSTEMS	ICT OPERATIONAL MANAGEMENT	
		ICT DESIGN AND DEVELOPMENT	
		GOVERNMENT AND DEFINITION OF ICT OPERATIONAL PLANS	
		SAFETY MANAGEMENT	
	SUPPLIES	PURCHASES MANAGEMENT OF RAW MATERIALS	
		MANAGEMENT OF PURCHASE OF CONSUMABLE MATERIALS	
		EQUIPMENT PURCHASE MANAGEMENT	
	FINANCE	INCOMING/OUTING CASH FLOW MANAGEMENT	
		MANAGEMENT OF FINANCIAL MOVEMENTS	
		DEBT COLLECTION MANAGEMENT	
		BALANCE MANAGEMENT OF PURCHASE INVOICES	
		LOAN MANAGEMENT	
	MARKETING & SALES	INVESTMENT MANAGEMENT	
		PRICING	
		COMMUNICATION	
		ADVERTISING	
			SALES MANAGEMENT

ORGANIZATION	COMMERCIAL DEVELOPMENT	
	CUSTOMER DATA MANAGEMENT	
	MANAGEMENT OF THE INTERNAL ORGANIZATIONAL STRUCTURE	
	MANAGEMENT OF BUSINESS PROCESSES	
	MANAGEMENT OF INTERNAL REGULATIONS	
	INTERNAL HELPDESK	
	GOVERNANCE/MANAGEMENT	STRATEGIC PLANNING
		BUDGET PLANNING
		MANAGEMENT CONTROL
		RESOURCE ALLOCATION
		INTERNAL AUDIT
COMPLIANCE MANAGEMENT		
EXTERNAL RELATIONS AND POLICIES		

ii) Choice of digital maturity model

In this fulfilment, we proceed to the textual description of the characteristics that must be undergone for each of the $(L + 1)$ levels provided by the model for each part (trunk, branches and leaves) of the company.

The textual description is made so that if the company is placed at a particular level, say the third, it must also meet all the requirements stipulated in the previous levels.

iii) Choice of the subset of digital items

The third preliminary fulfilment is choosing the subset of digital items and indicating which items should be present in each part of the company for each of the levels of the adopted digital maturity model. This fulfilment is divided into two stages. First, the complete list of digital items that must be considered is established.

Next, we define which technologies from the above list must be used for a specific business part to be characterized by a given level of the DMS. A business function can be classified in a given level of the DMS only if it uses all the items associated with that level.

We denote by j a specific digital item (with $j = 1, \dots, J$) and by ℓ (with $\ell = 0, 1, \dots, L$) a given level of the DMS. We further denote by $t_{a,b,c}(j, \ell)$ a dichotomous variable that takes value 1 if the adopted digital maturity model predicts that the a, b, c part of the firm adopts item j to be characterized by a level ℓ of the DMS, and takes value 0 otherwise. In the example below in Figure below, the value of the variable $t_{a,b,c}(j, \ell)$ for the customer service function ($a = 1, b = 4$ and $c = 3$) is presented.

Digital Item	Index j	DMS Level ℓ				
		0	1	2	3	4
Management/operational system	1	0	1	1	1	1
Reporting system	2	0	1	1	1	1
Internal/external microservices	3	0	1	1	1	1
Data platform	4	0	1	1	1	1
Robotic process automation	5	0	1	1	1	1
Artificial intelligence	6	0	0	1	1	1
Machine learning	7	0	0	1	1	1
Blockchain/Distributed ledger technology (DTL)	8	0	0	0	1	1
Internet of things	9	0	0	0	0	1
Wearable devices	10	0	0	0	0	1
Business analytics	11	0	1	1	1	1
Quantum computing	12	0	0	0	0	1
Cybersecurity	13	0	1	1	1	1
6G Network	14	0	0	0	0	1
Cryptocurrencies	15	0	0	0	1	1
Digital asset	16	0	0	0	0	1
Fintech	17	0	0	0	0	1
Demographic changes	18	0	1	1	1	1
Technologies enabling smart working	19	0	1	1	1	1
Metaverse	20	0	0	0	0	1
Generative AI	21	0	0	0	1	1
Communication plan	22	0	1	1	1	1
Training	23	0	1	1	1	1
Operative model	24	0	1	1	1	1

The matrix shown above is made so that if $t_{a,b,c}(j, \ell) = 1$, we also have $t_{a,b,c}(j, \ell + 1) = 1$.

Step 1. Measurement of the DMS for the elementary parts (leaves) of the company

In this step, we define the value of the DMS, denoted in the following as

$$m_{a,b,c}$$

for each of the elementary parts a, b, c (in which $a = 1, \dots, A$; $b = 1, \dots, B_a$; $c = 1, \dots, C_{a,b}$) into which the company is divided. $m_{a,b,c}$ is an integer taking values from 0 to L . In the digital maturity model, we follow $L = 4$.

Determining the value $m_{a,b,c}$ can be done directly by comparing the company's reality with what is provided in the textual descriptions defined in preliminary fulfilment ii. The direct measurement is then validated by checking whether the set of digital items provided by the theoretical model are all used for the specific business function. Data collection can refer to one of the following four types:

1. interviews;
2. questionnaires;
3. automatic detections by procedures;
4. detections by ad hoc processing.

Direct measurement

Following the most straightforward procedure, the person in charge of the specific business function is asked up to $L + 1$ questions, where the first question in the sequence is the one related to level 0 of the DMS, then moves on to the question corresponding to level $\ell = 1$, and so on. In each question, the surveyor ascertains whether a business function operates according to what is illustrated in the text descriptions related to the level. For example, in the case of the customer service function, the question for level $\ell = 2$ of the DMS is as follows:

The following statement corresponds to the situation in the company? "The business function has begun to invest in innovative technologies, and some of the operational processes have been automated; however, digital transformation does not affect all areas of the function".

In case the answer is positive, the enumerator in charge of DMS assigns value 1 to the dichotomous variable $r_{a,b,c}(\ell)$. It continues with the interview, asking questions corresponding to level $\ell = 2$. In the case that the answer is negative, the enumerator assigns value 0 to the dichotomous variable $r_{a,b,c}(\ell)$ and stops the survey because if a business function does not reach a certain level of digital maturity, it certainly cannot meet the requirements of the next level (see following example).

DMS level ℓ	Question	Value of the variable $r_{a,b,c}(\ell)$
0	Is the customer service function based exclusively on manual processes?	1
1	Are the processes of the customer service function carried out with the partial support of digital applications but are not yet automated?	1
2	The customer service function has begun to invest in innovative technologies and some of the operational processes have been automated; However, doesn't digital transformation affect all areas of the function?	1
3	Has the customer service function automated all operational processes, both core and support?	0
4	The customer service function has integrated automated operational processes with analytics solutions for data analysis and with a specific governance model; Is the digital transformation fully assimilated into the culture of the people who have responsibility for the function?	0

The value $m_{a,b,c}$ is obtained simply by summing the values of the variable $r_{a,b,c}(\ell)$:

$$m_{a,b,c} = \sum_{\ell=0}^L r_{a,b,c}(\ell). \quad (1)$$

Let us now consider a more complicated case in which a specific level of the DMS can only be achieved if two or more requirements are met. In this situation, each condition can be expressed with a single question. The variable $r_{a,b,c}(\ell)$ takes value 1 only if all questions corresponding to the various requirements of the level are answered positively. The measurement of DMS is always done according to formula 1.

Verification of the value of the variable $m_{a,b,c}$ by the digital items

Suppose that the direct measurement has assigned a value of the DMS of the business part (a, b, c) equal to 3, being thus, $m_{a,b,c} = 3$. With respect to preliminary requirement iii, the (a, b, c) function must then adopt all the digital items provided for that level and so it results in $t_{a,b,c}(j, 3) = 1$.

To verify that the $m_{a,b,c}$ level is assigned correctly, it is therefore necessary to conduct a survey to know all the digital items used by the company part in question.

At the end of this survey, the value of a dichotomous variable $u_{a,b,c}(j)$, will be known, where

$$u_{a,b,c}(j) = \begin{cases} 1 & \text{if digital item } j \text{ (} j = 1, \dots, J \text{) is used by the company sector } a, b, c \\ 0, & \text{otherwise} \end{cases}$$

Consequently, from a formal point of view, if the company is assigned level ℓ of the DMS, the following condition must occur

$$\sum_{j=1}^J t_{a,b,c}(j, \ell) u_{a,b,c}(j) = \sum_{j=1}^J t_{a,b,c}(j, \ell). \quad (2)$$

If condition 2 is not verified, the DMM manager has two alternatives. He can lower the level of the variable $m_{a,b,c}$ assigned by direct measurement. Alternatively, he/she can confirm the assessment already given, believing that the detected violation of condition 2 is not so severe as to compromise the company's digital maturity level.

Step 2. Calculation of the DMS for the aggregated parts (branches and trunk) of the holding by aggregating the DMS of the leaves

The calculation of the DMS for the aggregate parts of the firm is obtained by weighted averages of the $m_{a,b,c}$ values determined in step 1.

The digital maturity index for the second-level part b of the company, denoted in the following as $m_{a,b}$, is obtained as

$$m_{a,b} = \text{round} \left(\frac{\sum_{c=1}^{C_{a,b}} \delta_{a,b,c} w_{a,b,c} m_{a,b,c}}{\sum_{c=1}^{C_{a,b}} \delta_{a,b,c} w_{a,b,c}} \right), \quad (3)$$

where: $\text{round}(\cdot)$ denotes the rounding function of the term included in parentheses; $w_{a,b,c}$ is the variable that defines the weight of the part (a, b, c) of the firm; and $\delta_{a,b,c}$ denotes a dichotomous variable that takes value 1 if a part (a, b, c) is present among the parts of the firm and takes value 0 otherwise.

If the maturity index must always be expressed as an integer, rounding defined in step B is required. The transition from natural numbers to integer numbers means that the DMS represents business reality somewhat less accurately. However, it facilitates communication within the company.

It is necessary to use the variable $\delta_{a,b,c}$ because sometimes the subdivision of the company predicted by the theoretical model is not reflected in the company's operational reality. Some elementary parts (a,b,c) may not be recognizable in the operational models adopted by the company.

Similar to the above, the digital maturity index for the function a of the first level is obtained as

$$m_a = \text{round} \left(\frac{\sum_{b=1}^{B_a} \delta_{a,b} w_{a,b} m_{a,b}}{\sum_{b=1}^{B_a} \delta_{a,b} w_{a,b}} \right),$$

where $\delta_{a,b}$ and $w_{a,b}$ have similar meanings to those already illustrated for $\delta_{a,b,c}$ and $w_{a,b,c}$.

Finally, the digital maturity index for the whole company is obtained as:

$$m = \text{round} \left(\frac{\sum_{a=1}^A \delta_a w_a m_a}{\sum_{a=1}^A \delta_a w_a} \right).$$

Choice of weights

The choice of weights is a fundamental process to guarantee the precision of the model, so much so that the weights adopted in the proprietary algorithms of the consultancy companies that certify digital maturity are not made public, for obvious reasons of protection of company secrecy.

The weighting of a model is connected to the following factors:

- the area in which the model is used;
- the state of maturity of the digital technologies considered;
- the strategic orientation of the company which may place greater emphasis on one sector than others

A variety of methods can be used to **determine the weights** $w_{a,b,c}$ at the elementary function level (a,b,c) . Weights can:

1. be defined based on a subjective judgment of the expert responsible for defining the company's digital maturity;
2. assume an equal value for all functions. For example:

$$w_{a,b,c} = 1 / \sum_{a=1}^A \sum_{b=1}^{B_a} C_{a,b};$$

3. be calculated based on a variable that measures the company's commitment to the specific function; such as, for example, the cost associated with resources for carrying out the function;

4. be obtained as a univariate synthesis of different data related to digital maturity available in the company's information systems. This summary can be carried out either subjectively, taking into account the specific company reality, or by adopting a statistical criterion.

- Subjective criterion.
- Statistical criterion. Different statistical techniques can be used for this purpose. In this context, principal

component analysis and factor analysis are the main suggested methods. Synthetic indices are an alternative method that can be used. The weights $w_{a,b}$ and w_a for calculating digital maturity for the company's higher-level functions can be determined either with subjective criteria or as an aggregation of the weights of the elementary functions, or:

$$w_{a,b} = \sum_{c=1}^{C_{a,b}} w_{a,b,c}, w_a = \sum_{b=1}^{B_a} \sum_{c=1}^{C_{a,b}} w_{a,b,c}.$$

Step 3. Presentation of the assessment results

Depending on the model and the measurement scale adopted, the summary result of the assessment is represented by the DMS of the analyzed company, eventually detailed for the different functions analyzed and compared with a benchmark.

Results. The application of the model in the business context enables the achievement of four main objectives:

- 1) drawing a clear vision of business development in terms of digitalization;
- 2) obtaining a competitive advantage through increased revenues and reduced costs resulting from the digitalization process and the introduction of new digital items;
- 3) possibility of comparing oneself with the market and other companies thanks to consistent quantitative metrics;
- 4) possibility of requesting public incentives (e.g. PNRR) thanks to an objective need mapping.

Application procedure

IT tools can apply the model. The use of tools guarantees greater efficiency in the analysis thanks to a highly automated process, and the possibility of immediate comparison of the analyses carried out and the results with the market benchmark, whose indicators are calculated using the same methodology. By applying the theoretical approach presented in this paper, it is possible to calculate the indicators of the company's digital maturity level (DMS), through which an organic digitalization plan (digital transformation) can be designed and implemented.

a. Detection (model steps 0 and 1)

The data collection phase begins with the identification of the level of relevance for the reference sector of each digital item (market appetite) expressed in terms of "Not relevant", "Nice to have", and "Must have" and of the processes in the perimeter for the company's calculation of digital maturity. For each process, the adoption degree of the digital items presents is indicated and expressed in terms of "Low", "Medium", and "High"

b. Processing (model step 2)

The data entered by the company for each process under analysis are automatically processed in order to calculate and subsequently represent:

- Relevance of digital items in the processes, compared to the reference sector;
- DMS of the analyzed company and detail by function (weighted result, calculated vs. relevance of digital items in the industry).

Starting from the data entered as input, relating to the adoption degree of the digital items on the processes, we proceed with the processing. In this phase, the result could be represented through a matrix comprising digital items and processes, which reports the adoption degree.

Presentation of the results (step 3 of the model)

Firstly, the data is processed and combined with the level of relevance or weighting in the reference sector of each digital item. This allows the visualization of the analyzed processes grouped by function according to a graphic matrix. The matrix correlates the adoption degree of the digital items present in the processes and their relevance to the sector. This helps identify the priorities of intervention for the company. For instance, it helps to identify functions whose processes are not very mature compared to the sector they belong to and digital items in which to invest and digitalize. The results are reported using a color scale where red corresponds to low or zero levels of digital maturity. Intermediate digital maturity levels are in orange, and high digital maturity levels are in green. Based on the matrix, it is possible to define a scale of priorities to plan interventions, to bridge the gap between the digital maturity of the company and the reference sector. Functions with lower values (more tending towards red) have a higher priority since there are digital items relevant to the reference sector and with low maturity levels. It is possible to use the resulting matrix to carry out benchmarking, comparing with similar companies or benchmark values. This is thanks to the reprocessing of the input data according to the same methodology. The model comprises three phases that allow us to identify the digital maturity level of the company, its functions, and their priority. This is hypothesized based on the combination of the previous information. Using this data, in the practical application of the model, it is possible and necessary to develop a personalized digitalization plan based on the evidence that has emerged. At this point, expert consultants are expected to intervene, identify priorities, and broaden the analysis with unconsidered business aspects, risk factors, critical business profiles, or compliance needs.

Research limitations. Since this is an approach based on the comparison with an ideal situation described in qualitative terms through assertions that describe the optimal combination between the use of digital technologies and processes, there is a certain amount of discretion which is mitigated through the adaptation of the ideal reference model

to the various company realities and related processes.

Managerial implications. From a managerial point of view, the measurement of the degree of digital maturity of a company and the evidence of the gaps relating to the best performers allow the construction of improvement paths oriented towards specific operational processes and focused on certain technologies. This analysis helps us identify market opportunities, evaluate costs and expected benefits, and estimate macro activation times. The intervention aims to prepare a “Digital Transformation Roadmap”. This is an organic planning of interventions based on prioritization, immediately activating quick win actions, and simultaneously launching structural interventions to increase digital maturity in the medium-long term.

Originality of the paper. Examining the available literature highlights the need for a rigorous conceptualization of the digital maturity measurement process, which in existing approaches adopts algorithms based on empirical evidence drawn from previous assessment experiences. A conceptual description of the digital maturity determination algorithm is contained in Brodny J, Tutak M (2021), where however the focus is placed on the evaluation of the digital maturity of 11 European countries observed as a whole. The article assesses the level of digital readiness of enterprises in these countries based on 14 determinants characterizing the most important areas of the digitalization process. Multi-criteria analysis aimed at assessing the digital maturity of countries was performed using the Multi-Criteria Decision-Making methods (the TOPSIS, MOORA, VIKOR), and entropy methods for delineating the weights of the determinants. To obtain an unambiguous assessment of the determined digital maturity, the mean-rank method was applied. The method of multidimensional scaling allowed for the analysis of similarities between the countries in question.

This work aims to build a new theoretical measurement model applicable to the generality of companies and based on computational algorithms adaptable to any reality through parameterization and weighting mechanisms.

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Track 3
International Business

Exploring the impact of cybersecurity on digital export: evidence from food industry

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Abstract

Although agri-food enterprises have started to use advanced digital technologies for international trade, their exploitation may be hindered by their cyber risk aversion and reluctance to share sensitive information with foreign partners. Accordingly, this study aims to investigate firstly, whether the use of digital technologies has any effect on their export performance and secondly, whether cyber risk aversion may influence digital exporting. Through a quantitative study of a sample of 446 Italian companies operating in the food, beverages and tobacco industry, our results show that digital business technologies are key business assets to sustain export performance and that cyber risk perception negatively moderates digital exports.

Key words: digital technologies; export performance; cyber risk aversion; moderation; food; beverage

Framing of the research. Digital technologies have quickly changed the way international business is conducted (Nambisan, Zahra, & Luo, 2019). They enable firms to access foreign markets through business platforms that facilitate the connection between organizations and enable them to optimize their exchanges (Rakshit, Islam, Mondal & Paul, 2022; Carballo, Rodriguez Chatruc, Salas Santa, & Volpe Martincus, 2022; Marinagi, Trivellas, & Sakas, 2014; Ghalandari, 2013). Their wide availability and accessibility encourage companies of all sizes to leverage them for internationalization and, most often, digital technologies prove necessary for smaller companies that lack resources for more traditional entry modes (Cavusgil & Knight, 2015; Meyer, Li, Brouthers, & Jean, 2023). In recent years, agri-food companies have also started to exploit them to internationalize and efficiently manage trade with their partners, driven by increasingly globalized tastes and lifestyles and the growing demand for authentic food products from traceable and sustainable sources (Carballo, Rodriguez Chatruc, Salas Santa, & Volpe Martincus, 2022; Elia, Giuffrida, Mariani, & Bresciani, 2021; Popkin, 2006; Rashmi, Shree, & Singh, 2017). Moreover, recent Covid-19 pandemic has increased their dependence on digital technologies and online platforms, forcing actors to accelerate their adoption to ensure the continuity of food supplies and respond timely to disruptions (Hew, Wong, Tai, Ooi, & Lin, 2020). Several technologies connect suppliers and buyers through international platforms such as Foodem, Trace Register, Cropin, and Walmart Grocery (Chatterjee, Chaudhuri, Mariani, & Wamba, 2023; Elia, Giuffrida, Mariani, & Bresciani, 2021; McIntyre & Srinivasan, 2017). While Internet of Things (IoT) applications allow to track food in real time along the supply chain and environmental parameters useful for their storage, Blockchain and cloud computing applications allow to share such information with business partners (Ross & Blumenstein, 2015). Extant research shows that these technologies strengthen relationships between distant suppliers and distributors and speed up trade exchange in highly perishable food products, generating transparent, sustainable, and competitive supply networks (e.g., Tsolakis, Niedenzu, Simonetto, Dora and Kumar, 2021; Kittipanya-ngam and Tan, 2019; Crew, 2018). In highly disjointed production contexts, these advanced digital technologies may reduce information asymmetries between firms and enable more efficient business exchanges management without intermediaries and supporting infrastructure (Strange & Zucchella, 2017). Prior literature has recognized the usefulness of such technologies for the internationalization of the agri-food industry on many levels. They facilitate the identification of potential international partners and the connection with them, reduce foreign investment costs and improve the exchange efficiency while minimizing food waste and losses and, consequently, increasing products quality (e.g., Carballo, Rodriguez Chatruc, Salas Santa, & Volpe Martincus, 2022; Rakshit, Islam, Mondal, & Paul, 2022; Hervé, Schmitt, & Baldegger, 2020; Tseng and Johnsen 2011). The integration of digital technologies into agri-

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food value chains may also enable companies to seize new opportunities through so-called big data mining, performing market analyses that reveal different purchasing trends in the multiple geographies involved (Wamba, Gunasekaran, Akter, Ren, Dubey, & Childe, 2017; Lee, 2017; Akter, Wamba, Gunasekaran, Dubey, & Childe, 2016). All these advantages of using digital technologies in internationalization strategies may result in export growth and, consequently, better overall economic performance.

Beyond their benefits, these technologies have also raised major cyber security concerns due to numerous hacker breaches against several industry companies since 2017 (Latino & Menegoli, 2022). Among the most serious, ransomware attacks on JBS in 2021, a Brazilian beef producer with factories around the world, and Rovagnati in 2022, an Italian company producing cured meats (Cen, Jiang, Qin, Jiang, Doss, 2023). Accordingly, international activities of agri-food firms through technologies may also be influenced by the perceived cyber risk and the measures put in place to counter it (Guerra & Boys, 2022). GlobalData shows that the percentage of food companies investing in cybersecurity has increased from almost 30% in 2021 to almost 45% in 2022¹. Extant research depicts how companies often adopt various cybersecurity measures to prevent cyber risks (e.g., Hasani, O'Reilly, Dehghantanha, Rezaia, and Levallet, 2023; Latino and Menegoni, 2022). The most common plan of action includes protections against attacks and defense mechanisms for the resilience of affected systems, such as systems vulnerability analysis, staff training on the safe use of digital technologies, antivirus software, firewalls, and data encryption (Zimmermann and Renaud, 2019; Lezzi, Lazoi, and Corallo, 2018). However, current assessments of their usefulness in terms of reducing perceived risk and economic return seem to be insufficient or incomplete. Indeed, previous literature appears to be theoretical and mainly focused on describing the factors that influence the decision to invest in cybersecurity (Hasani, O'Reilly, Dehghantanha, Rezaia, and Levallet, 2023) and measures to protect against particular forms of attack on the food chain (e.g., Manning, 2019, Manning and Soon, 2016), including ideological attacks (Bonell, Meiksin, Mays, Petticrew, & McKee, 2018) and agroterrorism (Spink and Moyer, 2011). Typically, the greater the organizations' risk aversion, the greater the investment in cybersecurity measures (Wessels, van den Brink, Verburgh, Cadet, & van Ruijven, 2021). While many studies consider these preventive actions crucial for corporate security (e.g., Hasani et al., 2023), data reveal they are not sufficient to reduce organizations' risk aversion towards advanced digital technologies. In fact, despite the investments in extensive cyber protection measures, most firms still fear cyber-attacks and feel unprepared to deal with them (World Economic Forum, 2014). Indeed, in highly uncertain contexts, investing in cyber security measures may enhance organizations' awareness of potential risks and, consequently, increase their aversion (van Schaik, Jeske, Onibokun, Coventry, Jansen, & Kusev, 2017). This phenomenon may lead companies to limit the use of the most vulnerable advanced technologies or reduce digital trade with unsafe specific organizations and rogue countries.

Purpose of the paper. Although existing studies have recognized the benefits of using advanced digital technologies, there are still few assessing their effects on food firms' economic performance (Liao, Wang, Baibing, and Weyman-Jones, 2016). Moreover, although studies on cyber risk and cybersecurity actions in the agri-food sector have recently increased, empirical analyses are needed to identify the effects on business performance (Latino and Menegoli, 2022).

Therefore, this project aims to investigate 1) the relationship between advanced digital technologies and export performance and 2) how cyber risk aversion - as the amount of cybersecurity measures taken by organizations - moderates the relationship between digital technologies and export performance. Specifically, in light of above arguments, we formulate the following hypotheses:

Hypothesis 1. The use of advanced digital technologies is positively correlated with agri-food firms' export performance.

Hypothesis 2. Organizations' cyber risk aversion negatively moderates the relationship between digital technology use and export performance.

Methodology. To test our hypotheses, we derive our data from the Survey on Industrial and Services Enterprises (Fonte: Banca d'Italia, Indagine sulle imprese industriali e dei servizi, [2005-2021]), annually conducted by the Bank of Italy. This survey collects information on investments, turnover, and other economic variables of enterprises with administrative headquarters in Italy, operating in the industrial and private non-financial services sectors with at least 20 employees and in the construction sector with at least 10 employees. For this study, we selected a sample of firms operating in the food, beverage, and tobacco industry. Although the focus of our study is not the tobacco industry, it was not possible to further refine the sample selection and limit it to food and beverage enterprises due to the structure of the original data. Moreover, the lack of records for several variables in many years constrained us to limit our analysis only to 2016. As a result, we obtained a cross-sectional dataset of 446 observations. The estimates were made using the Remote Execution (REX) system of the Bank of Italy, which allows remote processing of the data collected in the survey. To safeguard the confidentiality of information specific to the firms participating in the survey, the Bank of Italy limits access to its microdata through a remote processing system, which allows external researchers to perform econometric analyses without having direct access to the microdata.

Table 1 lists the variables relevant to the study. As dependent variable, we considered Export performance corresponding to the logarithm of firm's export sales volume. As independent variable, we considered Digital technology intensity, corresponding to the number of different technologies adopted by each firm, from 0 to 4. As moderator variable, we considered Cybersecurity, that is a proxy of organizations' cyber risk aversion. It is constructed as a factor variable loading two items, namely Cybersecurity investment and Cybersecurity intensity. Cybersecurity investment is a

¹ <https://www.just-food.com/dashboard/jobs/cybersecurity-hiring-levels-in-food-industry-remain-in-growth-data/>

continuous variable that refers to firm's investment in cybersecurity measures, while Cybersecurity intensity is an ordinal variable that counts the number of different cybersecurity measures adopted by each firm, from 0 to 4. Finally, we included five variables to control for firm and environmental heterogeneity.

Since our dependent variable, Export performance, is a continuous measure, we run a linear Ordinary Least Square (OLS) model. Given export performance's potential dependence on its past values, we also incorporate in the model a first-order autoregressive AR(1) process that includes the lagged value of the dependent variable as a regressor (Greene, 2003; Salomon and Jin, 2008; 2010). Its inclusion allows both to account for a dynamic firm-specific component and to control for data serial correlation (Deng, Jean, and Sinkovics, 2018; Reeb, Sakakibara, and Mahmood, 2012; Greene, 2003; García, Avella, and Fernández, 2012). Furthermore, to consider the possible delay with which the use of advanced digital technologies may be reflected in export performance, we specify a regression model with a one step-ahead dependent variable (Wang and Ma, 2018; Gao, Murray, Kotabe and Lu, 2010). In doing so, we mitigate possible endogeneity issues, such as reverse causality between dependent and independent variable, commonly observed in the relationship between international expansion and firm characteristics (Wang and Ma, 2018; Greene, 2003). Therefore, to test our hypotheses, we estimate two dynamic regression models. Firstly, we perform a dynamic regression model to test the positive effect of firm's digital technology intensity on export performance. Then, we perform another dynamic regression model to test the moderating effect of cyber risk aversion on the relationship between firm's digital technology intensity and export performance.

Results. Table 2 shows the descriptive statistics of the variables. For confidentiality reasons, the Bank of Italy does not release the minimum and maximum values of continuous variables. Although digital technologies are increasingly necessary for food, beverage and tobacco enterprises, their adoption appears still very low. Indeed, we note that on average our sample does not use even one of the four digital technologies considered (mean value = 0.38).

Table 3 shows Pearson's correlation coefficients between variables. Correlations between variables are low, excluding potential issues of multicollinearity (Wang and Ma, 2018).

Table 4 shows the results of our regression model. Model 1 represents the baseline model with control variables. As the F statistic is significant, they are collectively relevant in predicting export performance ($F = 87.94$, $p < 0.01$). In Model 2 and 4, we tested our hypotheses. Firstly, we tested the effect of digital technologies on export performance. Accordingly, Model 2 reveals that digital technology intensity has positive effects on export performance ($p < 0.01$). This result supports Hypothesis 1. Secondly, we tested the moderating effect of cybersecurity measures on the relationship between digital technology intensity and export performance. Accordingly, in Model 4, we added the interaction term between digital technology intensity and cybersecurity measures. Our results show that cybersecurity measures negatively moderate the relationship between digital technology intensity and export performance, as evidenced by the negative interaction term ($p < 0.10$). This supports Hypothesis 2, although we do not find strong support for the moderating effect of firm's cybersecurity measures on the relationship between advanced digital technology intensity and export performance.

As regards control variables, Firm size, Firm age, Past export performance and Geographical location - when organizations are located in northern Italy - are positive and significantly correlated with export performance. Surprisingly, product innovation is not significant. According to F statistics, all models in Table 4 have jointly significant coefficients. Whereas R2 indicates that Model 4 fits the data better than other models. Finally, the variance inflation factor (VIF) of each regression model does not exceed 10, indicating no serious multicollinearity problems (Neter, Wasserman, and Kutner, 1990).

To check the robustness of our results, we introduced an alternative measure for digital technologies use, namely Share of investments in digital technologies, which is an ordinal variable ranging from 0 to 4. The results in Table 5 (Model 1 and 2) show a positive but non-significant coefficient. Therefore, Hypothesis 1 is not supported when using an alternative technology use measure; on the contrary, Hypothesis 2 is confirmed.

Research limitations. While acknowledging that the analysis is based on data that may not be considered exceptionally updated, it is essential to note that the nature of the low-tech sector under examination tends to exhibit relatively low dynamics. The unique characteristics of this sector suggest that the impact of digital technologies and cyber risk aversion may have experienced more gradual changes compared to high-tech industries. Consequently, the validity of the results is not necessarily compromised by the temporal gap. Additionally, it is noteworthy that this study stands out as one of the few quantitative investigations exploring the relationship between digital technologies, cyber risk aversion, and export performance in the low-tech sector. Despite the temporal considerations, the scarcity of such empirical research underscores the significance of the present findings, adding a unique dimension to the understanding of how advanced digital technologies impact internationalization strategies in traditionally low-tech industries. Secondly, the study considers small, medium-sized, and large companies alike, but the results may not necessarily be the same between them. Therefore, future studies should verify any differences between different sized enterprises. Thirdly, it is limited to cross-sectional data. The cross-sectional nature of the study provides information on correlations rather than unequivocal cause-and-effect mechanisms. Therefore, a more detailed analysis using panel data would be useful for further research. Finally, through more advanced statistical techniques, future research should consider the potential heterogeneity of the organizations included in the study and the initial differences between groups of companies exposed and not exposed to digital technologies and cybersecurity measures. In the future, the study could also be extended to several countries. Indeed, it is reasonable to assume that digitalization, together with other variables, may have different

effects on internationalization in different economic contexts. The adoption of some forms of digital technologies and cyber security measures are not geographically homogeneous, thus influencing the available policy options.

Managerial implications. The empirical results of this study suggest that food and beverage organizations should consider using advanced digital technologies to improve their export performance. Technology is a key tool to foster international expansion and increase trade efficiency. However, our research shows that high perceived cyber risks could curb their use. Organizations wishing to practice digital exporting should adopt a balanced approach that aims to protect business operations against cyber threats and mitigate perceived risks without compromising the use of technologies to enter and compete in international markets. As a result, they should engage to foster a corporate culture that recognizes both the need to protect data and the importance to innovate for business growth. Targeted training programs, specialized personnel, partnerships with security experts, and modern cybersecurity protocols are critical measures for responsible technology adoption. These measures are twofold; on the one hand, they improve risk awareness and reinforce best practices for addressing them; on the other hand, they bring the company closer to the technology and encourage it to leverage it.

Originality of the paper. This article addresses the call for digital trade studies focused on specific industries. Specifically, we focused on a single industry sector rather than the broader manufacturing environment and advanced technologies rather than the most common technologies, investigating their effect on firms' export performance. On the other hand, our study extends the research on digital exporting by analyzing how certain factors influence this positive relationship and interfere with it. In particular, we study how cyber risk aversion moderates the correlation between technologies and exports. Although the role of technology on internationalization strategies has been the subject of numerous studies, there is no exploration of this phenomenon within a traditionally low-tech sector.

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Tables and Figures

Table 1. Variables description

Variables	Type	Description
Dependent variable		
Export performance	Continuous variable	Logarithm of firm's export sales volume
Independent variable		
Digital technology intensity	Ordinal variable	Number of different technologies adopted by each firm, from 0 to 4.
Moderating variable		
Cybersecurity		Factor variable loading two variables, i.e. Cybersecurity Intensity (number of different cybersecurity measures by each firm, from 0 to 4) and Cybersecurity investment (firm's investment in cybersecurity measures)
Control variables		
Firm size	Ordinal variable	Firm size for employees' size classes (1 = 0 - 49 and 2 = 50 and over)
Firm age	Continuous variable	Logarithm of the difference between 2016 and the firm's founding year
Product innovation	Continuous variable	Logarithm of firm's expenditure on trial design and production activities
Geographical location	Ordinal variable	Geographical location of firm (South and islands = 1, Centre = 2, North = 3)
Past export performance	Continuous variable	Logarithm of firm's export sales volume at time t-1.

Source: own elaboration

Table 2. Descriptive statistics

Variable	N	Mean	Std. Dev.	Min	Max
1. Export performance (ln)	446	6.912697	3.740966	-	-
2. Digital technology intensity	446	0.38565	0.815121	0	4
3. Cybersecurity	446	2.336632	7.855954	-	-
4. Firm size	446	1.524664	0.499952	1	2
5. Firm age (ln)	446	3.58133	0.868213	-	-
6. Product innovation (ln)	446	1.469732	2.35758	-	-
7. Geographical location	446	2.132287	0.910852	1	3
8. Past export performance (ln)	446	5.630496	4.313253	-	-

Source: own elaboration.

Table 3. Pearson's correlations

	1	2	3	4	5	6	7	8
1. Export performance (ln)	.							
2. Digital technology intensity	0.2511	.						
3. Cybersecurity	0.128	0.28	.					
4. Past export performance (ln)	0.6922	0.221	0.0894	.				
5. Geographical location	-0.2463	-0.1022	-0.0976	-0.0744	.			
6. Firm size	0.3374	0.1862	0.0888	0.2516	-0.2317	.		
7. Product innovation (ln)	0.2079	0.2138	0.0987	0.2203	-0.1041	0.1550	.	
8. Firm age (ln)	0.1735	0.073	0.0425	0.1319	-0.1076	0.0673	0.1638	.

N = 446. Source: own elaboration.

Table 4. Linear regressions results

Dependent variable <i>Export performance</i>	Model 1	Model 2	Model 3	Model 4
Control variables				
<i>Firm size</i>				
0-49				
over 50	0.979*** (0.270)	0.915*** (0.268)	0.913*** (0.269)	0.901*** (0.268)
<i>Firm age (ln)</i>	0.258* (0.146)	0.245* (0.145)	0.244* (0.145)	0.255* (0.143)
<i>Product innovation (ln)</i>	0.055 (0.051)	0.037 (0.053)	0.036 (0.052)	0.036 (0.052)
<i>Geographical location</i>				
<i>South and Islands</i>				
Centre	-0.396 (0.353)	-0.479 (0.353)	-0.473 (0.351)	-0.468 (0.350)
North	1.359*** (0.269)	1.334*** (0.267)	1.325*** (0.269)	1.332*** (0.268)
AR(1) component				
<i>Past export performance</i>	0.545*** (0.038)	0.535*** (0.038)	0.535*** (0.038)	0.537*** (0.038)
Independent variable				
<i>Digital technology intensity</i>		0.351*** (0.120)	0.329*** (0.128)	0.383*** (0.126)
Moderating variable				
<i>Cybersecurity</i>			0.008 (0.017)	0.042 (0.029)
Interaction term				
<i>Digital technology intensity * Cybersecurity</i>				-0.014* (0.008)
<i>Constant</i>	1.893*** (0.563)	1.945*** (0.562)	1.943*** (0.561)	1.836*** (0.555)
<i>N</i>	446	446	446	446
<i>Model F statistics</i>	87.94***	81.08***	71.44***	63.55***
<i>R²</i>	0.54	0.55	0.55	0.56
<i>VIF</i>	1.15	1.15	1.16	1.68

Source: Own calculation. Standard error in brackets. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$ (two tailed).

Table 5. Linear regressions results - alternative specification

Dependent variable <i>Export performance</i>	Model 1	Model 2
Control variables		
<i>Firm size</i>		
0-49		
over 50	0.966*** (0.270)	0.959*** (0.271)
<i>Firm age (ln)</i>	0.248* (0.147)	0.236* (0.148)
<i>Product innovation (ln)</i>	0.048 (0.052)	0.036 (0.053)
<i>Geographical location</i>		
<i>South and Islands</i>		
Centre	-0.403 (0.353)	-0.396 (0.351)
North	1.351*** (0.268)	1.347*** (0.269)
AR(1) component		
<i>Past export performance</i>	0.544*** (0.038)	0.545*** (0.038)
Independent variable		
<i>Share of investments in digital technologies</i>	0.111 (0.133)	0.156 (0.137)
Moderating variable		
<i>Cybersecurity</i>		0.043* (0.025)
Interaction term		
<i>Share of investments in digital technologies * Cybersecurity</i>		-0.021* (0.013)
<i>Constant</i>	1.902*** (0.563)	1.886*** (0.566)
<i>N</i>	446	446
<i>Model F statistics</i>	75.11***	59.29***
<i>R²</i>	0.55	0.55
<i>VIF</i>	1.14	1.58

Source: Own calculation. Standard error in brackets. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$ (two tailed).

Industry 4.0, Sustainability, and Internationalization: A Systematic Literature Review

MARTINA TOMASETIG¹

Abstract

In today's rapidly changing business environment, the connection between Industry 4.0, sustainability, and internationalization holds high importance for scholars and practitioners alike. The integration of these three topics has gained significant attention in scholarly discourse in several research fields, from international business (IB) to operations, from sustainability to innovation, marketing, and entrepreneurial studies. This ongoing systematic literature review aims to uncover the relationship between Industry 4.0, sustainability, and internationalization at a firm level. The review employs the PRISMA approach and critically analyzes 55 high-quality journal articles. The research encompasses a descriptive and in-depth thematic analysis to extract insights and provide a thorough understanding of the state of the art. The work delves into the evolving perspectives, conceptual foundations, and empirical studies with the final objective of developing a synthetic framework to help identify the main topics of analysis and propose further research avenues, therefore providing actionable insights and contributing to the evolving discourse on integrating Industry 4.0 with sustainability in an international context.

Key words: Industry 4.0; internationalization; sustainability; literature review; international business; SDGs

Framing of the research. *In today's fast-paced VUCA world, where volatility, uncertainty, complexity, and ambiguity affect organizations' activities (Halloui et al., 2022), the relationship between Industry 4.0, sustainability, and internationalization has emerged as a critical nexus for organizations aiming to thrive in the global marketplace (Ciulli and Kolk, 2023). This research aims to map the existing literature on the convergence of these three topics, which have a transformative potential in understanding how firms do business.*

Digital transformation is moving trillions of dollars in economic value (Rießmann et al., 2015) and has fundamentally altered various aspects of society, including how people live, work, think, and learn (Del Giudice et al., 2021). Digital development influences how firms operate nationally and internationally, boosting flexibility, speed, productivity, and quality (Rießmann et al., 2015) while impacting internationalization processes, competitive advantage, and location choices (Li et al., 2022). Industry 4.0 affects the IB environment, emphasizing the interplay of digital innovation and social engagement, sustainability, and global entrepreneurship (Luo and Zahra, 2023). The impact digitalization has on social, ecological, and economic sustainability - the so-called Triple Bottom Line (Elkington, 1997) - has become a topic of growing interest, leading to flourishing literature that underlines the impact of digital technologies on sustainability at large (Broccardo et al., 2023). The study of the relationship between Industry 4.0 and sustainability is still relatively new. However, it has gained an exponentially growing interest from the academic community, leading to the development of theoretical frameworks (Beier et al., 2020; Isensee et al., 2020; Beltrami et al., 2021; Khan et al., 2021; Touriki et al., 2021; Holzmann and Gregori, 2023) and empirical analyses (Broccardo et al., 2023). Specifically, most recent studies underline the positive effect of adopting digital technologies on sustainable practices (Beltrami et al., 2021) and performance (Broccardo et al., 2023).

Concurrently, human-induced climate change underscores the urgency for sustainable business practices (IPCC, 2023). In this context, the United Nations' Sustainable Development Goals (SDGs) provide a strategic imperative and a global compass for businesses (Del Río Castro et al., 2021; UN DESA, 2023), calling upon the integration of sustainability not only as a societal obligation but also as a crucial component in shaping consumer preferences and business norms (IPCC, 2023). Sustainability efforts move together with the technological development of society (Del Río Castro et al., 2021; Broccardo et al., 2023). Integrating digital technologies and sustainability can drive better efficiency and effectiveness in business operations and reduce environmental impacts (Bag and Pretorius, 2022; Broccardo et al., 2023). Industry 4.0 can enable the implementation of sustainable practices across organizational boundaries, reducing information gaps and promoting collaboration among stakeholders (Ilinitch et al., 1998; Beltrami et al., 2021; Rejeb et al., 2022; Broccardo et al., 2023). Also, sustainability is expected to play a crucial role in pushing organizations toward technology adoption (Beltrami et al., 2021) even though this proposition remains an open question in academia (Rosa et al., 2020; Beltrami et al., 2021; Ghobakhloo et al., 2021; Perera et al., 2023). Sustainability in IB has become crucial

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for organizations operating in global markets, leading to better environmental performance and management (Gómez-Bolaños et al., 2022).

Ultimately, with the rising between-countries inequalities and polycrisis (UN DESA, 2023), businesses are urged not to abandon global strategies despite global geopolitical tensions (Altman and Bastian, 2023). Internationalization allows firms to develop their activities globally, thus gaining significant competitive advantages in international markets (Jantunen, 2005). In recent years, the discipline has gained substantial interest in the emerging topics of digital technologies (Luo and Zahra, 2023) and sustainable development (Gómez-Bolaños et al., 2022). The degree of firm internationalization has been generally associated with positive, even though not linear, financial performance (Hsu and Boggs, 2003). Nonetheless, scholars have overlooked IB activities' social and environmental effects (Luo and Zahra, 2023).

All these challenges intensify the need for transformative change (Altman and Bastian, 2023), which may be achieved through a better holistic understanding of the complex interrelationships between digitalization, sustainability, and international strategies. The existing literature has partially scrutinized these aspects. However, a significant research gap remains (Ciulli and Kolk, 2023), thus requiring a novel analysis of the matter. Such a need has been underlined in a recent call by the *Journal of International Business Studies* (JIBS), which identifies calls for research to integrate Industry 4.0 and sustainability in IB research (Luo and Zahra, 2023).

Purpose of the paper. This work-in-progress systematic literature review (Massaro et al., 2016) aims to a) identify the main topics arising from studying the relationship between Industry 4.0, sustainability, and internationalization at a firm level in the existing literature and b) point out the directions for future research identified in studies concurrently addressing the three topics.

The study comprehensively reviews 55 high-quality journal articles to achieve its purpose. Through a rigorous examination, we delve into the context of these papers, seeking to extract insights that provide a thorough understanding of the existing state of the research (Paul and Criado, 2020). The review's findings will be synthesized through a dual-analysis approach encompassing a descriptive and in-depth thematic analysis. This approach allows us to uncover the main topics explored in the existing literature. The study's primary objective resides in developing a synthetic framework articulating the primary issues and their interconnection, representing this research domain's state of the art. Finally, the study will extend its impact by proposing future research questions, providing a foundation for developing this field of analysis.

Overall, we aim to respond to a compelling research call, providing a new perspective on the relevance of Industry 4.0 and sustainability in IB research.

Methodology. We employed the PRISMA methodology (Page et al., 2021), a structured approach recognized for its systematic review process. This method encompasses four steps to ensure the review's rigor and replicability – identification, screening, eligibility, and inclusion (Figure 1).

Step 1: Identification. We identified the papers using the Scopus and Web of Science (WOS) databases. Both are deemed two of the most comprehensive databases for academic literature and are widely used for developing literature reviews in various disciplines (Rosa et al., 2020). First, the keyword selection was performed. The keywords are classified into three clusters – Industry 4.0, sustainability, and internationalization. Words referred to Industry 4.0 were identified considering both keywords widely connected to the Industry 4.0 concept (Beltrami et al., 2021), as well as to its technologies at an academic (Frank et al., 2019) and practitioner's level (Rüßmann et al., 2015). The terms related to sustainability considered the work by Beltrami et al. (2021), a literature review on the relationship between digitalization and sustainability, and the work by Sarkis and Zhu (2018), which only reviews papers on sustainability. Finally, the keywords on internationalization were selected considering all the internationalization phenomena. Therefore, the focus was put on broad terms of internationalization (Fan et al., 2021), traditional MNEs (Ocelík et al., 2023), entry modes (Cuervo-Cazurra et al., 2023), and new internationalization phenomena (Paul and Rosado-Serrano, 2019; Romanello and Chiarvesio, 2019). The keywords were combined in a unique string using the OR and AND logical operators. Only articles and reviews in business, management, and accounting areas published in ABS-ranked journals (Chartered Association of Business Schools, 2021) written in English and published from 2011 to 2024 were considered. These restrictions were applied to guarantee the quality of the examined works, thus focusing the analysis on the "best available evidence" (Durach et al., 2017).

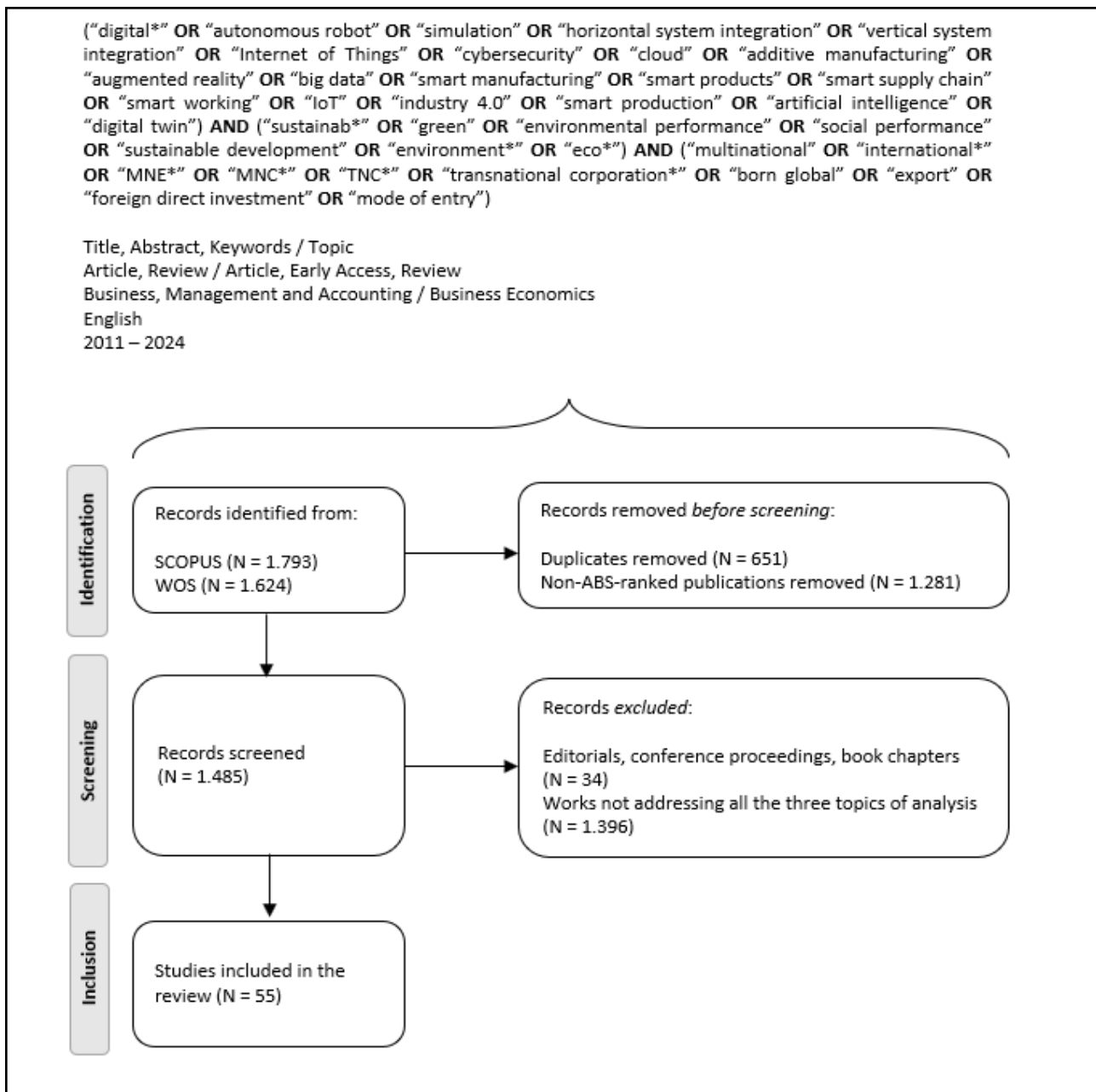
Step 2: Screening. The research performed on the Scopus database returned 1.793 results, whereas 1.624 documents were extracted from the WOS Core Collection database. We merged the two into a unique dataset containing 3.417 documents. Next, duplicates were removed, and non-ABS-ranked papers were excluded. The identified sample included 1.485 documents. Microsoft Excel and IBM-SPSS software were used to analyze the results of the research query, identify ABS-ranked papers, and delete duplicates. The documents were thoroughly screened by reading their abstract. Whenever the information provided in the abstract did not discern the paper's content, the full text was screened to assess its coherence with the analysis topic. The complexity of the subject called for an attentive process of exclusion of the papers carried out by the authors. Exclusion criteria were set considering the research aims of the work (Petticrew and Roberts, 2008).

The papers needed to be journal articles or literature reviews. Papers not falling within these categories (e.g., editorials, conference proceedings, book chapters) were removed. Furthermore, the documents needed to address all three topics. All papers missing at least one of these dimensions and works focused only on technical considerations (e.g., engineering studies on specific technologies and optimization simulations not providing managerial contributions) were excluded from the sample.

Step 3: Eligibility Assessment. *Applying the exclusion and inclusion criteria allowed us to identify 55 papers extracted from the two databases. The works were read, analyzed, coded, and classified. In addition to the data extracted from Scopus and WOS, the following information was included for further analysis: type of research (theoretical, empirical, or literature review), the methodology adopted, main research findings and unit of analysis, digitalization topic addressed, sustainability topic addressed, internationalization focus and the interconnection of the three issues, future research avenues suggested, country of study, hypotheses or propositions developed, theoretical lens, framework, model adopted.*

Step 4: Inclusion. *In the final phase of the research, a comprehensive examination of the 55 selected articles was undertaken. This involved a descriptive analysis and an in-depth thematic study, with the final aim of creating a synthetic framework that systematically categorizes studies exploring the nexus of Industry 4.0, sustainability, and internationalization.*

Figure 1: PRISMA 2020 flow diagram for new systematic reviews



Source: our elaboration

Preliminary Results and Future Steps. *Preliminary findings from the analysis, including descriptive and thematic coding, reveal several critical insights regarding the existing literature on the convergence of digitalization, sustainability, and internationalization.*

Descriptive findings. The descriptive analysis followed the fashion of previous literature reviews (Ocelík et al., 2023; Romanello & Chiarvesio, 2019) to achieve a good representation of the research trajectory on the relationship between Industry 4.0, sustainability, and internationalization and to provide a compelling narrative, which underlines the multidisciplinary nature of the topic. The 55 articles were published between 2015 and 2024, with a notable rise in publications culminating in 20 papers published in 2023. The primary source for these articles was the *Journal of Cleaner Production* (9), followed by *Technological Forecasting and Social Change* (5).

Looking at the field categorization provided within the ABS ranking (Chartered Association of Business Schools, 2021), the articles selected belong to several research fields. The works were primarily published in IB and area studies journals (12). However, a great deal of work also comes from outlooks on ethics, CSR, and management (10), sectoral studies (9), innovation (8), and operations management (4). The sample also includes articles published in the fields of information management (2), economics (2), social sciences (2), strategy (1), marketing (1), entrepreneurship (1), organizational studies (1), finance (1) and human resource management (1).

Most of the scrutinized papers were empirical (33). Nonetheless, many theoretical articles are also present in the sample (14), suggesting that a substantial body of work conceptualizes the interrelation of the topics under scrutiny. Finally, 8 papers were literature reviews. The breakdown of empirical papers allows for a further distinction of the methodological characteristics of the studies. Among the 33 papers, 15 employed quantitative methods, 14 qualitative methods, and 4 a mixed method approach.

We can identify two main categories by looking at the geographical distribution of empirical studies. The first includes single-country studies (15). The second refers to cross-country analyses (18). Within the single country set of articles, most are developed within Asia (8) and European countries (4), whereas the African and American continents are scrutinized in 2 and 1 papers, respectively. Most articles opted for a cross-country design, showcasing a global perspective that includes multiple nations and regions. Most empirical papers (8) took an overall international approach.

Thematic analysis. We can glimpse several study perspectives by looking into the content of prior literature reviews. Some reviews address the pressing issues of the impact of COVID-19 on the social sustainability of global supply chains (Sajjad, 2021) or the crisis management potential of digital technologies (Galetsi et al., 2023). Others explore broader trends, such as the transformation of international human resource management and the role of digital technologies in international mobility (Fan et al., 2021) or the potential of Industry 4.0 for sustainable development of GVCs (Awan et al., 2021) and MNEs (Dias Lopes et al., 2023; Ocelík et al., 2023). A growing interest exists in how digital tools can be harnessed for economic growth and social good, especially in developing countries (Ghauri et al., 2022). Concerns around the responsible implementation of digitalization, including cybersecurity risks (Sanili Aydin and Uste, 2022) and ensuring data privacy and ethics (Galetsi et al., 2023), emerge as relevant themes. These reviews provide a valuable foundation for understanding this evolving field, highlighting opportunities and challenges that demand further investigation.

At a conceptual level, the research delves into the intricate connections between digitalization, sustainability, and internationalization (George and Schillebeeckx, 2022). A common theme is the potential of digital technologies, including AI and Big Data, to address sustainability challenges within MNEs and GVCs (Pla-Barber et al., 2021; George and Schillebeeckx, 2022; Wedemeier and Wolf, 2022; Choy et al., 2023; Ciulli and Kolk, 2023; Wang, 2023; Etemad, 2024). These technologies can enhance control mechanisms, improve decision-making, and promote sustainability (Pla-Barber et al., 2021; Choy et al., 2023; Wang, 2023). Nonetheless, concerns exist around the environmental impact of digitalization, such as e-waste, and the potential for exacerbating social inequalities (Dauvergne, 2022; Ciulli and Kolk, 2023; Yi et al., 2023). Interestingly, sustainability is emerging as a driver of internationalization strategies, influenced by changing consumer preferences and pressure to address climate change (Ghauri et al., 2021; Choy et al., 2023; Asakawa and Clegg, 2024; Etemad, 2024). The complex and evolving landscape of IB requires new theoretical frameworks and a focus on the opportunities and challenges digitalization presents (Verbeke and Hutzschenreuter, 2021; Ghauri et al., 2022; Malik and Froese, 2022; Ciulli and Kolk, 2023). Collaboration and partnerships with local stakeholders are crucial for navigating the complexities of IB activities and achieving shared value creation using digital technologies for sustainability (Choy et al., 2023; Yi et al., 2023; Asakawa and Clegg, 2024).

A preliminary review of the empirical studies highlights recurring themes across the literature. Firstly, a distinction can be made between studies addressing MNEs versus international SMEs. Overall, there is widespread recognition of the transformative impact of digital technologies, including Industry 4.0, cloud computing, AI, and 3D printing, in driving sustainability efforts and enhancing organizational competitiveness in MNEs (Tatham et al., 2015; Ajwani-Ramchandani et al., 2021; Il Park and Xiao, 2021; Patchell and Hayter, 2021; Oyinlola et al., 2022; Cortese et al., 2023; Costa et al., 2023; Ferreira et al., 2023; Li, Zhang, et al., 2023). These technologies enable resource optimization, supply chain resilience, and tailored solutions, thereby contributing to environmental conservation, social sustainability, and improved performance and reputation (Stroud, 2020.; Akhtar et al., 2018; Forcadell et al., 2020; Díaz-Chao et al., 2021; Costa et al., 2023; Ferreira et al., 2023; Li, Ye et al., 2023; Li, Zhang, et al., 2023). Conversely, no common understanding of digitalization's positive effects on SMEs' performance is identified. Some researchers argue that digitalization can play a constructive role in SMEs' internationalization and sustainability strategies (Mamabolo and Lekoko, 2021; Del Giudice et al., 2023; Falcke et al., 2023), while other works underscore the challenges deriving from Industry 4.0 and sustainability adoption (De Lucas Ancillo et al., 2022; Dwivedi et al., 2022; Oliva et al., 2022a; Jamwal et al., 2023; Suchek et al., 2023; Choi et al., 2024) and identify those as competing growth paths in case of SMEs' internationalization (Denicolai et al., 2021).

Secondly, several studies delve into business model adaptation and sustainability in IB settings (Asi et al., 2023; Li, Lahy, et al., 2023; Ringvold et al., 2023; Oghazi et al., 2024; Thornton, 2024) underlying the progressive shift of international enterprises' business models towards circular digitally enabled ones. Also, the literature focuses on global supply chain and logistics (Holl and Mariotti, 2022; Marrucci et al., 2022), confirming the positive effect of digitalization on the sustainability of supply chain management.

Finally, research at the individual level addresses consumer attitudes toward digital technologies (Ratten, 2015), providing several insights into the ethical evaluation companies need to consider when introducing digital innovation in global markets.

Future research avenues. Consistent calls for future research permeate the selected works, highlighting the need to address gaps, understand stakeholder interests, and explore implications for governance, organizational structures, and location advantages (Awan et al., 2021; Ocelík et al., 2023).

First, there is a need to analyze the role of Industry 4.0 technologies and circular economy in global supply chains. Existing literature has highlighted the potential of digital technologies in promoting circular economy principles in supply chain management (Awan et al., 2021; Dauvergne, 2022). However, empirical research on the topic is lacking.

Second, novel research shall investigate the role of entry modes and international performance in the context of Industry 4.0. Research has primarily focused on the bright side of digitalization and its effect on sustainable IB (Oliva et al., 2022; Dias Lopes et al., 2023). Nonetheless, a need emerges to delve into the specific entry modes and their impact on IB performance in the era of digitalization.

A third area of novel research addresses the role of digital technologies and environmental costs in global manufacturing. While studies have highlighted the positive impact of digital technologies on environmental and social sustainability in manufacturing (Ferreira et al. 2023; Li, Ye et al. 2023), there is a need to investigate further the potential ecological costs associated with the widespread adoption of Industry 4.0 technologies at an international level.

Finally, Industry 4.0 and sustainable consumption behavior in global markets should be addressed. Existing works have explored the impact of Industry 4.0 on sustainable consumption (Ratten, 2015). However, a gap remains in developing empirical research to understand consumer behavior in the context of digital transformation in diverse international markets.

Future steps for research development. Notably, this research is a work-in-progress. The following research steps will further develop the preliminary findings through a more systematic approach. The next steps will include refining the descriptive and thematic analysis by organizing the data into a synthetic framework. Additionally, conducting a comprehensive literature synthesis to identify critical patterns, themes, and gaps will be crucial. Subsequently, the research can address these gaps through empirical studies that delve deeper into the relationship between digitalization, sustainability, and internationalization. Finally, integrating theoretical perspectives and applying robust methodologies will enhance the credibility and rigor of this literature review.

Research limitations. This ongoing research paper presents limitations that should be acknowledged.

Firstly, the study's scope is limited to a review of journal articles, excluding conference proceedings and book chapters. Given the time required to publish journal articles, this choice may lead to not capturing all the novel research trends.

Secondly, the rigorous analysis approach (Page et al., 2021) may have excluded relevant papers that did not fit the pre-defined inclusion criteria.

Finally, the development of a synthetic framework, while helpful in identifying the main topics of analysis and proposing future research avenues, may not capture the full complexity of the relationship between digitalization, sustainability, and internationalization.

Managerial implications. This work-in-progress research offers valuable insights with significant organizational consequences by reviewing the literature on Industry 4.0, sustainability, and internationalization at a firm level. For researchers interested in pursuing this study area, the preliminary findings highlight some critical research gaps and suggest future research avenues.

For businesses, the research provides valuable guidance on leveraging digitalization to support sustainable practices within IB operations, allowing firms to explore opportunities to enhance resource efficiency, reduce environmental impact, and potentially improve brand reputation. Also, firms can become aware of the downsides of Industry 4.0 adoption and gain an understanding of strategic insights on leveraging digitalization and sustainability for thoughtful international strategies.

Additionally, policymakers can utilize the findings to understand the complex challenges and opportunities at the intersection of digitalization, sustainability, and internationalization. This knowledge can inform the development of policies encouraging MNEs and SMEs to adopt responsible digital business practices in the global marketplace.

Originality of the paper. This ongoing research addresses a critical research gap by conducting a systematic literature review on the convergence of Industry 4.0, sustainability, and internationalization at a firm level.

The work analyzes 55 high-quality journal articles and delves into the context of these papers to extract insights and provide a thorough understanding of the existing state of the research (Massaro et al., 2016). The review employs descriptive and thematic analysis to uncover the main topics explored in the literature, evidencing the primary themes, and offering a representation of the state of the art in this research domain (Ocelík et al., 2023).

The focus on the interplay between these three elements provides a novel perspective on IB research. This work responds to a compelling call for research in the IB area (Luo and Zahra 2023). By highlighting the transformative potential of digital technologies in driving sustainable practices in IB strategies, the research addresses a highly relevant topic in today's rapidly changing business environment. The development of a framework of analysis stemming from the literature review offers a valuable starting point for further discussion and investigation within this emerging field of research.

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The advantage of stateness abroad: an analysis of the social networks of state-owned enterprises

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Abstract.

The present research delves into the intricate role of network structures at the board level in steering the internationalization strategies of state-owned enterprises (SOEs). By integrating Social Network Analysis (SNA), this study meticulously explores how network centrality, density, and the diversity of ties influence SOEs' endeavors in global markets. Drawing upon theoretical frameworks from International Business and corporate governance, the analysis scrutinizes the impact of network characteristics on the international activities and market expansion of SOEs, with a particular focus on the European context. The findings reveal that network centrality enhances SOEs' ability to form international deals, while network density is linked to a competitive advantage in global markets. Additionally, the diversity of network ties is found to significantly contribute to successful market expansion. These insights not only shed light on the mechanisms guiding SOEs' global expansion but also underscore the importance of understanding network structures for policymakers, practitioners, and scholars in the field of International Business. The study, while centered on Europe, highlights the broader applicability of its findings to SOEs' internationalization strategies in various geopolitical and economic settings, offering a foundation for future comparative studies.

Key words: *State-owned enterprises, Internationalization, International Business, Foreign markets, Social network analysis, Network theory*

Framing of the research. *State-owned enterprises (SOEs) are becoming increasingly important worldwide. According to the OECD, the proportion of SOEs in the top 500 global companies has seen an increase of three times from the first years of this century (OECD, 2023). SOEs in the OECD area are valued at over 2 trillion USD and are highly concentrated in strategic sectors. Half of SOEs by value operate in the network industries (telecoms, electricity and gas, transportation and postal services) and SOEs cross-border activity has diversified and increased in this century (Cuervo-Cazurra et al., 2014). For decades, SOEs have faced an evolving landscape in different political and geographical areas. During the last century, especially after the Second World War, developed countries have seen a strong increase in the development of new SOEs and in their international activity, while emerging economies led the global scenarios only in the last 30 years (IMF, 2020). This process has led to the creation of global players.*

SOEs contribute to the domestic development and business goals. Moreover, SOEs serve as a vehicle to reach fundamental non-business (political) objectives by governments, such as the supply of critical resources, national security and technological knowledge. A clear example of this phenomenon is the case of the Italian oil&gas national company ENI in Algeria after the beginning of the Ukraine-Russia conflict. With the new agreement, the Italian government was able to solve the incumbent problem of raw materials supply (gas) through the one of main SOEs in the energetic sector.

The International business (IB) literature shows a similar path to the development of SOEs in the business world mentioned before, focusing on different periods, geographical contexts and institutional, political, economic and governance features (Cuervo-Cazurra et al., 2023). For these reasons, SOEs are crucial actors in the international and domestic landscape both, as well as a relevant topic for policy, institutions, firms and practitioners.

This research aims to pose again the attention on the European context as in the seminal papers on SOEs and internationalization, considering the limited attention in the last decade of studies on emerging markets with a prevalence of Chinese companies. In order to reach this goal, we use a social network analysis of European SOEs to investigate the role of network centrality, density and diversity of network ties in shaping their internationalization activity. With this research, we aim to contribute to the ongoing debate on SOEs internationalization extending the view on board of directors features and focusing on a unique international context. Drawing on previous theories and contending their assumptions, we contribute to the literature on SOEs and internationalization, developing a set of hypotheses on SOEs' formal network structure.

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Social Network Analysis (SNA) is a methodological approach used to analyze the patterns of interaction among social entities such as individuals, groups, organizations, or even entire societies. This analysis focuses on understanding the relationships and networks that form among these entities and how these relationships impact behaviors, decisions, and outcomes. SNA examines various aspects of these networks, including the structure (like network density or centrality), the quality of relationships (like strength or reciprocity), and the dynamics of network changes over time.

SNA is applied in various fields, including sociology, anthropology, psychology, business, and more recently, in online social media studies. It provides insights into how information flows, how influential certain entities are within a network, and how subgroups and communities form within larger networks.

The book of Wasserman & Faust (1994) is considered a comprehensive and authoritative text in the field, providing both theoretical and practical guidance on conducting social network analysis. It covers a wide range of topics, from basic concepts and measures in network analysis to its applications in various disciplines.

SNA in the field of International Business is a methodological tool focused on analyzing social networks among individuals, groups, organizations, or entire nations. This approach examines how relationships among these actors influence behaviors, resource allocation, information flows, and overall success in the international business context.

SNA emphasizes studying network structures, looking at aspects such as the density of connections, bridges between different groups, or central nodes within the network. This analysis can reveal hidden dynamics, such as power distribution, access to resources, innovation diffusion, strategic alliance formation, and cultural or geographical barriers within and among organizations.

In International Business, SNA is particularly useful for understanding how global networks of communication and cooperation influence business strategies, international expansion, and competitiveness. For instance, it can help companies identify key strategic partners, understand how information travels across different cultures and markets, and develop strategies to navigate complex international networks.

Tichy et al. (1979) is one of the earliest and most influential works applying social network analysis in an organizational context and provides a solid foundation for understanding how this methodology can be applied in the realm of business.

Studying State-Owned Enterprises (SOEs) in the field of International Business is important for several reasons:

a) Economic Impact and Prevalence: SOEs are significant players in the global economy. They often control substantial shares in key sectors such as energy, utilities, and telecommunications. Understanding the operations and strategies of SOEs is crucial due to their impact on global trade and investment patterns.

b) Government Influence and Policy Implications: SOEs are unique in that they are influenced by government policies and objectives. This dual role of being economic and political entities makes it essential to study how they balance commercial objectives with governmental mandates, and how this affects international trade and investment environments.

c) Competitive Dynamics: SOEs can operate under different rules from private sector companies, including receiving state support or subsidies. This can significantly alter competitive dynamics in international markets, raising important questions about market fairness, competition policy, and the level playing field in international trade.

d) Globalization and Market Entry Strategies: SOEs are increasingly engaging in internationalization strategies. Studying their approaches to entering foreign markets, forming international partnerships, and navigating diverse regulatory landscapes contributes to a broader understanding of global business practices.

e) Cross-Cultural Management and Governance: SOEs often have different management and governance structures compared to private firms. This raises interesting questions about how these structures influence international business practices, cross-cultural management, and corporate governance in an international context.

f) Innovation and Technology Transfer: Some SOEs are at the forefront of innovation in their respective industries. Studying them can provide insights into how state involvement affects technological advancement and the international transfer of technology.

g) Response to Global Challenges: SOEs often play critical roles in responding to global challenges such as climate change, energy security, and sustainable development. Understanding their strategies and actions in these areas is crucial for comprehending broader efforts in addressing global issues.

First studies concerning the internationalization of SOEs in IB literature appeared starting from the 1970s, focusing on advanced economies (Aharoni, 1980; Vernon, 1979). Since the beginning of this branch of research, authors suggested different influences and impacts of state ownership on international expansion, highlighting the advantages or disadvantages of states (Cuervo-Cazurra & Li, 2021). However, after these pioneering studies for many years the interest on SOEs vanished, SOEs were considered inherently inefficient entities and in many European countries push forward intensive privatization plans. In the last decade, new studies have emerged especially focusing on emerging economies that led the international environment from early 2000s, reporting state-owned firms' internationalization as a prominent topic in IB literature (Cuervo-Cazurra, 2018; Grøgaard et al. 2019; Cuervo-Cazurra et al. 2023). SOEs are particular kind of companies in which the government (or other national public entities) owns shares of capital, often a majority stake, although minority ownership is sometimes considered within SOEs due to the presence of significant influence in business decisions (Inoue et al., 2013). Moreover, a growing number of studies is considering the new nature of these companies globally, focusing on "hybrid" SOEs, in which the government owns only a partial percentage of equity shares (Estrin et al., 2016; Chen et al., 2018; Bruton et al., 2015).

These types of firms have characteristics related to the specific goals and interests they pursue, thus generating peculiar differences in the ownership and board compared to private firms. Governments can directly influence the

management of such companies to achieve different types of objectives. The first substantial difference from private firms concerns the type of goals pursued, which is not coincident with opportunity to maximise profit. In fact, the State, through its involvement in the capital of companies, wants to ensure the so-called “non-business objectives” that involve the pursuit of national interests (Cuervo-Cazurra et al., 2014), such as the supply of natural resources, energy and security (Bass & Chakrabarty, 2014; Buckley et al., 2008). These non-business objectives may collide with the goal of profit maximisation. Indeed, national interests, driven by politics and governments, are given priority.

Consequently, corporate governance mechanisms in this type of companies present specific characteristics that need more in-depth studies (Grosman et al. 2016), considering, fundamental aspects such as political features, risks and performance (Tihanyi et al., 2019). In international business literature, we can find mixed results about state ownership and internationalization, that confirm the need for more studies. Some authors argue a negative influence of state ownership on firm internationalization (Wu & Chen, 2014; Zhang et al., 2011), while others suggest a positive relationship (Hennart et al., 2017; Benito et al., 2016) or inconsistent results (Liang et al., 2015; Hu & Cui, 2014). However, the influence of state ownership on internationalization remains still unclear (Musacchio & Lazzarini, 2014).

Purpose of the paper. The escalating prominence of state-owned enterprises (SOEs) in the global marketplace, coupled with their evolving roles across strategic sectors, underscores the need for a deeper examination of the factors influencing their internationalization strategies. This paper endeavors to dissect the intricate interplay between network structures at the board level and the internationalization processes of SOEs. Positioned at the nexus of International Business (IB) studies, corporate governance, and social network analysis, the purpose of this paper is multifaceted, aiming to elucidate the underexplored dynamics that shape SOEs' global market activities.

At the core of this investigation is the ambition to unveil how the centrality, density, and diversity of ties within SOEs' board networks impact their internationalization strategies. This focus emerges from a recognition of the profound yet nuanced effects that formal and informal network structures can have on organizational outcomes. Through a detailed social network analysis, this paper seeks to contribute to a nuanced understanding of the network-related mechanisms that facilitate or impede SOEs' international endeavors.

This research is driven by a purpose to bridge critical gaps in the current body of literature concerning the internationalization of SOEs. While previous studies have offered valuable insights into various aspects of SOEs' operations and strategies, there remains a significant lack of understanding regarding the role of network structures. By integrating theories from the realms of IB, corporate governance, and social network analysis, this paper aims to offer a comprehensive framework that can explain the complex dynamics at play in the internationalization of SOEs.

Another pivotal aim of this paper is to recenter the academic discourse on the European context of SOE internationalization. Recognizing the unique political, economic, and institutional landscape of Europe, this study seeks to illuminate how these factors, in conjunction with network structures, influence SOEs' international strategies. This focus is intended to not only fill a geographical gap in the literature but also to provide insights that could inform policy and strategic decision-making within and beyond the European context.

Employing social network analysis as the primary methodological approach, this paper sets out to make a significant methodological contribution to the study of SOEs. By meticulously mapping and analyzing the network structures of SOE boards, this research aims to offer new methodological avenues for exploring the relationship between network characteristics and organizational strategies. This approach underscores the paper's commitment to advancing the methodological tools available for investigating the complexities of SOEs in the international arena.

Beyond its academic contributions, this paper is motivated by the purpose to offer practical implications for policymakers, corporate leaders, and practitioners. By uncovering the roles that network structures play in shaping SOEs' international strategies, this research aims to provide actionable insights that can guide the formulation of policies and strategies to enhance the global competitiveness of SOEs.

In conclusion, this paper seeks to advance our understanding of the internationalization strategies of SOEs by focusing on the role of network structures at the board level, particularly within the European context. Through a comprehensive theoretical and methodological approach, this research aspires to bridge existing gaps in the literature, contribute to the development of new analytical frameworks, and offer practical insights for the effective management and governance of SOEs in the global marketplace.

Methodology. This chapter outlines the methodological framework employed in this study to investigate the influence of network structures at the board level on the internationalization strategies of state-owned enterprises (SOEs). Given the complexity of the research objectives, a multifaceted approach, incorporating Social Network Analysis (SNA) and leveraging a combination of secondary data sources, is adopted. This methodology is designed to ensure a rigorous examination of the network characteristics of SOEs and their correlation with internationalization activities.

The first step involves the identification and selection of European SOEs to be included in the study. The selection criteria are based on the enterprises' state ownership status, their engagement in international activities, and their strategic importance within their respective domestic economies. This process aims to assemble a diverse sample that reflects a wide range of industries and geographical contexts within Europe, ensuring the robustness and generalizability of the study's findings.

The links within the network are defined by the board members' connections across different SOEs. These connections are identified through board membership overlaps, where an individual serves on the boards of multiple SOEs, thereby

creating a link between them. This approach to defining links provides insights into the formal network ties that potentially facilitate information exchange, strategic alliances, and other forms of collaboration among SOEs.

With the firms and links identified, the study proceeds to construct the networks using UCINET, a comprehensive software package designed for the analysis of social network data. The construction of these networks allows for the visualization and analysis of the structural properties of the SOEs' board networks, including centrality, density, and diversity of ties.

Using UCINET, several key SNA metrics are calculated to assess the network characteristics of SOEs. These include:

- *Centrality Measures:* Degree and betweenness centrality are calculated to understand the prominence and influence of individual SOEs within the network.

- *Network Density:* This metric assesses how interconnected the SOEs are within the network, providing insight into the overall cohesion and potential for resource sharing among them.

- *Diversity of Network Ties:* The heterogeneity of the SOEs' connections in terms of industry sectors and geographical locations is analyzed to gauge the breadth of their network exposure.

Data for this study is collected from a combination of sources, including Orbis for corporate information, M&A databases for details on international strategic alliances and other forms of international engagement, and additional industry-specific databases for sectoral analysis. This multi-source approach ensures a comprehensive and accurate dataset for analysis.

The study employs a combination of qualitative and quantitative analytical techniques. For quantitative analysis, regression models are used to examine the relationship between network characteristics and SOEs' internationalization measures, such as the number of international alliances, market expansion, and competitive advantage indicators. Qualitative insights are derived from case studies and thematic analysis of strategic reports and public statements, providing depth to the understanding of how network structures influence SOEs' international strategies.

The methodology outlined in this chapter provides a robust framework for exploring the complex relationships between network structures at the board level and the internationalization strategies of SOEs. By employing a comprehensive approach that combines social network analysis with a rich dataset, this study aims to uncover the nuanced mechanisms through which network characteristics can influence SOEs' behavior and performance in the international arena.

Results. Through the application of Social Network Analysis (SNA), this study has illuminated the intricate ways in which network structures at the board level significantly shape the internationalization strategies of state-owned enterprises (SOEs). The preliminary findings reveal that SOEs occupying central positions within their networks are more adept at forming international alliances, joint ventures, and direct investments. This centrality facilitates access to essential resources and information, thus propelling SOEs towards international engagement. Additionally, the study underscores the competitive advantage gained by SOEs within denser networks, where the interconnectedness among enterprises fosters a conducive environment for knowledge and resource sharing, crucial for navigating international markets. Moreover, SOEs with a broad spectrum of network ties across various industries and geographical regions have demonstrated success in penetrating new international markets, attributed to the diverse insights and opportunities these ties provide.

Research limitations. While this study provides valuable insights into the role of network structures at the board level in influencing the internationalization strategies of state-owned enterprises (SOEs), it is important to acknowledge several limitations that may affect the generalizability and interpretation of the findings. These limitations also highlight areas for further research.

The research primarily concentrates on the European context, examining SOEs within a relatively stable and integrated economic and political landscape. While this focus allows for an in-depth understanding of SOEs' internationalization strategies within developed markets, it may limit the applicability of the findings to SOEs operating in vastly different geopolitical and economic environments, such as emerging or less integrated markets. Future research could address this limitation by conducting comparative studies that include SOEs from diverse geographical contexts, thereby enhancing the global applicability of the findings.

The study's emphasis on Social Network Analysis (SNA) and quantitative metrics for analyzing network structures and their impact on SOEs' internationalization might overlook qualitative aspects that are equally critical. These aspects include the nature of interpersonal relationships within networks, the influence of cultural factors on network dynamics, and the strategic decision-making processes of boards. Qualitative studies, employing interviews, case studies, or ethnographic methods, could provide deeper insights into these dimensions, complementing the quantitative findings and offering a more holistic view of SOEs' network structures.

This research captures a specific snapshot of network structures and internationalization activities, potentially overlooking the evolving nature of these elements over time. Networks are dynamic, with relationships and positions within the network likely to change as SOEs adapt their strategies in response to internal and external factors. Longitudinal studies could address this limitation by tracking changes in network structures over time and their impact on SOEs' internationalization strategies, offering insights into the temporal dynamics of networks and strategic adaptation.

The analysis focuses on formal network ties at the board level, potentially underestimating the role of informal networks, such as personal relationships between executives or interactions at lower organizational levels, which can also significantly influence SOEs' internationalization efforts. Future research could broaden the scope of network

analysis to include both formal and informal network ties, providing a more comprehensive understanding of the networking strategies that facilitate international expansion.

Acknowledging these limitations is crucial for situating the study's contributions within the broader field of international business and corporate governance research. By addressing these limitations in future studies, scholars can build on the findings presented here, further enriching our understanding of the complex interplay between network structures and the internationalization strategies of SOEs.

Managerial implications. The findings from this study on the impact of network structures at the board level on the internationalization strategies of state-owned enterprises (SOEs) carry profound implications for managers and policymakers involved in or with SOEs. These implications are crucial for enhancing the strategic positioning and global competitiveness of SOEs. Herein, we elaborate on the managerial implications drawn from the study's insights.

The study highlights the importance of centrality within SOEs' networks, indicating that SOEs with central positions in their network are more likely to engage successfully in international activities. For managers, this underscores the need to strategically cultivate network ties that enhance the organization's centrality. Building and maintaining relationships with key stakeholders, both within and outside the industry, can provide SOEs with access to vital information, resources, and opportunities critical for international expansion. Managers should, therefore, prioritize networking as a strategic tool, actively seeking board members with extensive connections or investing in relationships that bridge the SOE to new markets.

The positive correlation between network density and competitive advantage in international markets suggests that dense networks, where SOEs are interconnected through multiple ties, facilitate knowledge and resource sharing. Managers should leverage this by fostering a culture of collaboration and information exchange within their networks. Participating in industry consortiums, strategic alliances, and joint ventures can be effective ways to enhance network density. Moreover, policies encouraging inter-firm collaboration can lead to a more cohesive and supportive industry environment, bolstering the international competitiveness of all involved SOEs.

The diversity of network ties, encompassing a wide range of industries and geographic regions, has been shown to significantly contribute to the success of SOEs in international markets. Managers should, therefore, seek to diversify their networks deliberately. This could involve pursuing board members with international experience or forming strategic partnerships with firms in different sectors or countries. Such diversity not only broadens the SOE's perspective and access to different markets but also equips it with varied resources and knowledge bases to navigate the complexities of global expansion.

For policymakers, the study's findings emphasize the role of government in facilitating the internationalization of SOEs through network structures. Policies that encourage cross-border partnerships, international board appointments, and participation in international business consortia can significantly enhance the global reach of SOEs. Governmental support mechanisms, such as facilitating access to international networks through diplomatic channels or trade missions, can also play a crucial role. Furthermore, policymakers should consider the regulatory environment and its impact on SOEs' ability to form and maintain diverse and dense networks.

The managerial implications of this study provide a roadmap for SOEs and their stakeholders to harness the power of network structures for international success. By strategically cultivating centrality, leveraging network density, and exploiting the diversity of network ties, SOEs can significantly enhance their internationalization strategies. Additionally, supportive policies and government actions can amplify these effects, contributing to the global competitiveness and success of SOEs. The insights offered by this study not only contribute to the strategic management literature but also offer practical guidance for managers and policymakers aiming to navigate the complex terrain of international business..

Originality of the paper. The research presented in this paper brings a fresh perspective to the study of state-owned enterprises (SOEs) and their internationalization strategies, contributing original insights to the academic discourse and providing a nuanced understanding of the role of network structures at the board level. The originality of this paper is manifest in several key aspects:

This study breaks new ground by examining the impact of network structures on the internationalization strategies of SOEs, a topic that has received limited attention in existing literature. By focusing on the centrality, density, and diversity of ties within SOEs' board networks, the research sheds light on how these social structures influence SOEs' ability to engage in international markets. This novel focus not only fills a significant gap in the field of international business but also adds to our understanding of the complex dynamics that underpin the global operations of SOEs.

The paper distinguishes itself by centering its analysis on SOEs within the European context, a geographical focus that has been somewhat neglected in favor of studies on emerging markets. This emphasis provides valuable insights into the internationalization processes of SOEs in a developed market environment, highlighting unique challenges and opportunities that arise from Europe's distinct economic, political, and institutional landscape. The European focus enriches the discourse on SOEs by offering a comparative lens through which to view the internationalization strategies of state-owned entities across different global contexts.

Employing Social Network Analysis (SNA) to explore the relationship between network characteristics and the internationalization strategies of SOEs represents a methodological advancement in the field. This approach allows for a detailed examination of the structural properties of networks and their impact on organizational outcomes. By utilizing SNA, the paper introduces a novel methodological framework that enhances the analytical rigor with which the

international activities of SOEs can be studied, offering a model that can be replicated and expanded upon in future research.

Beyond its academic contributions, the originality of this paper also lies in its practical and policy implications. The findings offer actionable insights for managers of SOEs and policymakers, highlighting the strategic importance of cultivating diverse and central network positions to enhance internationalization efforts. By outlining the benefits of dense network structures for knowledge sharing and collaboration, the paper provides a blueprint for SOEs aiming to increase their competitiveness in the global arena. For policymakers, the research underscores the role of network-enhancing policies in facilitating the international expansion of SOEs, suggesting areas for regulatory reform and international cooperation.

Lastly, this paper contributes to ongoing theoretical debates regarding the advantages and challenges of stateness in the context of international business. By integrating insights from corporate governance, international business theory, and social network analysis, the study offers a comprehensive theoretical framework that elucidates the multifaceted influences of state ownership on SOE internationalization. This contribution not only advances theoretical understanding but also invites further scholarly inquiry into the intersecting domains of state ownership, network theory, and international strategy.

In sum, the originality of this paper is evident in its novel focus, geographical emphasis, methodological innovation, practical implications, and theoretical contributions. It paves the way for future research in the field of international business and offers valuable guidance for the strategic management and governance of SOEs in the global marketplace.

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La strategia ‘Grab and Go’: Intuizioni teoriche preliminari e possibili implicazioni

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Abstract

Sempre più frequentemente, i manager sono chiamati a valutare le strategie di internazionalizzazione da far intraprendere alle loro imprese. Tradizionalmente, le barriere all'ingresso poste in essere dai big player e le distanze esistenti tra mercati domestici e internazionali hanno calmierato l'interesse di espansione geografica. Sebbene queste considerazioni siano ancora valide perché viviamo in un contesto di semi-globalizzazione, le progressive integrazioni tra le economie hanno alimentato l'orientamento delle imprese a valutare con maggiore attenzione le opzioni di espansione. Tuttavia, i potenziali benefici legati all'internazionalizzazione devono essere confrontati con i rischi, le conseguenze e le criticità gestionali di porre in essere investimenti significativi per sostenere l'ingresso in mercati distanti. In questo lavoro - ancora in fieri - noi proponiamo uno schema teorico-interpretativo che consenta di comprendere se e in che modo le alleanze strategiche rappresentano un “cavallo di Troia” e, dunque, supportano la scelta di un'impresa - denominata docking firm - che, tramite l'alleanza stessa, intende penetrare il mercato internazionale. Per avanzare tale argomentazione, questo studio ricorre alla teoria delle opzioni reali. In definitiva, la ricerca concettualizza la strategia grab and go e prova a identificare - almeno concettualmente - una linea di demarcazione tra la cooperazione pura e il camouflage cooperativo.

Parole chiave: alleanze strategiche, coopetition, mercati internazionali, ‘grab and go’, opzioni reali

Inquadramento della ricerca. *Le alleanze strategiche rappresentano un tema fondamentale e frequente, sia nell'ambito della pratica manageriale, sia negli studi di strategia d'impresa, in generale, e di International Business (IB), in particolare. Nel corso del tempo, diversi studi hanno, infatti, esplorato il tema delle alleanze alla luce di diverse e complementari prospettive quali, ad esempio, la Teoria dei Costi di Transazione (Aubert et al., 1996; Hennart, 1988; Kogut, 1988; Williamson, 1989), la Teoria basata sulle Risorse (Andersen & Kheam, 1998, Das & Teng, 2000, 2003; Peng, 2001) e la Teoria Istituzionalista (Dacin, Oliver & Roy, 2007).*

L'interesse allo studio delle alleanze in IB - che si manifesta in un'ampia, continua e copiosa ricerca (Morschett, Schramm-Klein & Swoboda, 2010; Oliveira, Lumineau & Ariño, 2023; Schellenberg, Harker & Jafari, 2018; Zahoor, Khan, & Shenkar, 2023) - muove dalla considerazione che le alleanze costituiscono un'alternativa strategica per le imprese che valutano l'ingresso in nuovi mercati (Brouthers & Hennart, 2007; Dyer et al., 2018), nonché un'importante antecedente alla formazione delle stesse. Un fil rouge lungo tutta la letteratura esistente è che le alleanze consentono alle imprese di avere accesso, ma anche combinare (e ricombinare) risorse e capacità complementari. Se considerate come modalità di ingresso in un mercato internazionale, si suole osservare che le alleanze consentono alle imprese l'accesso a nuovi mercati e il superamento di distanze, siano esse reali e/o percepite, di natura culturale, amministrativa, geografica ed economica (Chen & Hennart, 2002). Allo stesso tempo, tuttavia, le alleanze sottendono delle criticità gestionali e dei rischi connessi, ad esempio, al mancato allineamento culturale e/o strategico tra i partner, che può condurre all'emergere di comportamenti opportunistici (Parkhe, 1993).

Dal momento che «le alleanze non sono molto stabili per natura» (trad. ns, Rajan & Dhir, 2020, p. 352), il numero crescente di imprese che ricorrono alle alleanze - anche tra rivali (Hamel, 1991; Hamel, Doz & Prahalad, 1989; Lado Boyd & Hanlon, 1997; Parkhe, 1993) -, unitamente al crescente numero di alleanze che falliscono ha, di fatto, dischiuso la necessità di indagare sulle ragioni sottese al perché alcune alleanze prosperano, rispetto ad altre che terminano anche prima della loro durata pianificata (Sadowski e Duysters, 2008; Reuer & Zollo, 2005). Se questo è valido per le alleanze, in generale, è ancor più vero per le alleanze in IB (McCutchen. & Swamidass, 2008; Serapio & Cascio, 1996). Ne segue che, parallelamente alla ricerca sui driver sottesi alla formazione delle alleanze, gli studiosi hanno anche indagato gli elementi che ne determinano la dissoluzione.

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Se le risorse e le capacità in dotazione dei partner di un'alleanza sono elementi imprescindibili e le complementarità delle risorse spiegano i processi di creazione di valore delle alleanze in mercati internazionali, ma anche la loro eventuale dissoluzione (Dyer et al., 2018), la dissoluzione delle alleanze è dunque da ricondurre alla differenza tra il valore creato dall'alleanza e le aspettative dei partner (Min, 2017). In altre parole, anche nel contesto di IB, la dissoluzione delle alleanze risente delle aspettative dei partner dell'alleanza che ricorrono sin dalla fase di formazione della stessa, definendone, sia le caratteristiche della alleanza, sia il modo in cui i partner sono strategicamente coinvolti nella relazione e, a sua volta, l'evoluzione dell'alleanza stessa. In nuce, riconosciamo che le aspettative sottese alla formazione delle alleanze richiedono ulteriore indagine. Questo lavoro si inserisce in tale dibattito muovendosi dalla letteratura di IB e adottando la prospettiva delle opzioni reali.

Sovente, la decisione di entrare in un mercato estero induce l'impresa a optare tra le tre principali modalità: esportazioni dirette; investimento diretto in un paese straniero (FDI) e; partnership con altre imprese tramite contratti di distribuzione. Diversi lavori hanno adottato la Teoria dei Costi di Transazione ed indagato in che modo l'incertezza ambientale, di settore e di paese, e la specificità delle risorse condizionano le decisioni di ingresso nei mercati internazionali (Anderson & Gatignon, 1986; Gatignon & Anderson, 1988; Gomes-Casseres, 1989; Hennart 1988, 1989, 1991). Altri lavori, emersi a partire dai primi anni del 2000, hanno adottato il modello OLI (Ownership, Location, Internalization) quale quadro teorico e riconosciuto i vantaggi di proprietà e posizione sottese alle scelte di ingresso (Bradley & Gannon, 2000; Brouthers, Brouthers & Werner, 1996; Pinho, 2007; Shrader, Oviatt & McDougall, 2000). Secondo la Teoria delle Risorse, il trasferimento di risorse chiave e complementari consente alle imprese di migliorare il vantaggio competitivo (Barney, 1991). Secondo la teoria Istituzionalista, la formazione di alleanze è rintracciabile nelle disposizioni proprie del contesto istituzionale del paese ospitante (Shellenberg et al., 2018). In estrema sintesi, la letteratura di IB riconosce che, in presenza di incertezza, le imprese preferiscono entrare in nuovi mercati sostenendo livelli inizialmente bassi di investimento che aumentano nel tempo, e la scelta dei tipi di alleanza strategica (licenze, franchising, joint venture, e così via) dipende dalle esigenze dei partner coinvolti e dal contesto in cui operano.

Muovendoci dalla letteratura di IB, in generale, e dal ruolo dell'incertezza per la scelta sulle modalità di ingresso nei mercati internazionali, in specie, (Chi, Li, Trigeorgis & Tsekrekos, 2019; Reuer e Ragozzino, 2014; Trigeorgis & Reuer, 2017; Santoro & McGill, 2005) riteniamo che la teoria delle opzioni reali si presti particolarmente a interpretare il fenomeno. Il ragionamento sulle opzioni reali ci consente di comprendere come le imprese gestiscono le loro alleanze in presenza di asimmetrie informative e di risorse e con conoscenze relativamente limitate sulle dinamiche di mercato in essere (Kogut & Kulatilaka, 2004). Più specificamente, secondo la teoria delle opzioni reali, le alleanze strategiche conferiscono all'impresa entrante una maggiore flessibilità per affrontare elevati livelli di incertezza. Il ragionamento supportato dalla teoria delle opzioni reali mette in luce che se le imprese competono in condizioni di particolare incertezza, possono effettuare piccoli investimenti con la possibilità di consolidarli, espanderli o abbandonarli in seguito. In altre parole, i piccoli investimenti agiscono come un'opzione call che un'impresa può detenere fino alla sua scadenza o esercitare quando si verificano circostanze esterne vantaggiose (Cuypers & Martin, 2007). Le imprese eserciteranno la loro opzione call quando il valore dell'attività sottostante supera il prezzo di esercizio (Cuypers & Martin, 2007).

Obiettivo del paper. *La ricerca - ancora in fieri - accoglie la sfida di concettualizzare una situazione ideal-tipo in cui la conclusione delle alleanze dipende dalla strategia che l'impresa entrante definisce nella fase di formazione. In particolare, il presente lavoro si propone di far leva sul ragionamento alla base delle opzioni reali per tracciare una forma specifica di alleanza strategica in IB. Vedendo le alleanze strategiche come una option call, riconosciamo che l'opzione di partecipare all'alleanza può essere rivalutata e modificata nel tempo. Questo approccio porta a diversi percorsi di azione che l'impresa può seguire nel futuro e concettualizza il camouflage cooperativo che le alleanze possono assumere. Quindi, teorizziamo una strategia "grab-and-go" che informa su un possibile percorso nella fase post-formazione delle alleanze strategiche.*

Seguendo il ragionamento sotteso alle opzioni reali, si interpretano le alleanze strategiche come opzioni call che permettono di differire la scelta di integrazione verticale o orizzontale. Questo passaggio si evidenzia in seno alla definizione dell'accordo, che permette di comprendere se l'alleanza sottende una semplice cooperazione o è una forma di camouflage.

Metodologia. *La ricerca si trova ancora in una fase embrionale di natura teorico-concettuale. Tale fase sostanzialmente speculativa si basa sull'interpretazione -ancora in corso - delle alleanze alla luce della teoria delle opzioni reali. In questo lavoro offriamo una concettualizzazione della strategia grab-and-go quale strategia che consente all'impresa entrante di raccogliere rapidamente risorse e conoscenze necessarie e prendere una decisione informata riguardo l'ingresso in nuovi mercati geografici. Nello specifico, si identificano due fasi: la fase "grab", che muove dalla cooperazione per acquisire le conoscenze e le risorse, l'accesso al mercato e ai fornitori e; la fase "go", dove l'impresa muove dalle conoscenze fino a quel momento acquisite per definire il corso di azione più appropriato. Attraverso la separazione dei due momenti è possibile mettere in luce il passaggio che intercorre tra la fase di "cooperazione visibile" e la fase di competizione. La cooperazione assume la sua "forma visibile" durante la fase grab per poi evolversi verso una forma di interplay di cooperazione e competizione e, dunque, avviare la fase di sostanziale rivalità. Tale forma di cooperazione visibile può assumere la doppia forma di "pure cooperazione" oppure già da subito di camouflage. In quest'ultimo caso emerge direttamente un interplay di cooperazione e competizione dove la competizione è camuffata (filosoficamente, questa forma richiama la matrice Confuciana di cooptation così come concettualizzata da Minà e Dagnino, 2021; Dagnino e Minà, 2021). Di fatti, nella fase go il partner che entra nel mercato rappresenta un potenziale rivale.*

La strategia grab-and-go caratterizza la valutazione delle decisioni di ingresso e delle relazioni con i partner riguardanti le opzioni to defer or stage. In particolare, l'alleanza è vista come una relazione temporanea e altamente indirizzata a rinviare la decisione di integrazione e facilitare un processo di ingresso graduale per superare le barriere d'ingresso e impedire reazioni dei rivali già presenti nel mercato.

La concettualizzazione proposta può essere d'uopo per approfondire le seguenti fasi. La prima fase è quella di Grab. Questa è la fase di coinvolgimento in cui l'impresa entrante (denominata docking firm) inizia una relazione apparentemente cooperativa con una impresa (denominata docked firm) nel mercato di destinazione. Questa cooperazione funge da opzione call e consente alla docking firm di acquisire le conoscenze e le risorse necessarie per valutare le varie incertezze legate alla penetrazione in un nuovo mercato. L'obiettivo è raccogliere informazioni sul mercato target (dinamiche competitive, preferenze dei clienti, fattori regolatori e altre informazioni rilevanti). Sfruttando la relazione con la docked firm, l'impresa entrante ottiene accesso alle conoscenze e alla rete del partner. Ciò renderà, ad esempio, più facile una rapida ed efficiente raccolta di informazioni sul nuovo mercato. Questa fase è caratterizzata dal trasferimento di conoscenze, dalle attività congiunte e dalla collaborazione per costruire una solida comprensione del mercato estero. In questa fase, l'impresa assume un comportamento di cooperazione visibile dove la rivalità rimane potenziale, e la sua evoluzione dipende dai cambiamenti e dagli sviluppi nel mercato.

La seconda fase è la fase Go: se sono stati registrati effetti positivi durante la fase di grab, l'impresa può decidere di esercitare l'opzione in modo espansivo, dando origine a processi di integrazione verticale (configurandosi come option to alter scale) o di integrazione orizzontale (configurandosi come option to grow). Al contrario, se le variazioni registrate non sono allineate alle aspettative e stanno diminuendo, l'impresa può scegliere di non esercitare l'opzione (se la relazione cooperativa non ha iniziato ad assumere una prospettiva cooperativa) o piuttosto esercitare l'opzione di uscita, terminando la relazione.

Implicazioni pratiche. *La principale implicazione del nostro studio riguarda la selezione del partner. L'alleanza rappresenta uno strumento per prendere decisioni non estremamente vincolanti per il futuro, consentendo all'impresa entrante di esercitare l'opzione in seguito. Chiamando l'attenzione sul rischio di una strategia grab-and-go, riconosciamo l'importanza dei segnali lungo l'alleanza. Se la docked firm riuscisse a cogliere le vere intenzioni prima che la docking firm possa esercitare l'opzione, potrebbe mettere in atto una serie di azioni che anticipino la durata della fase go, riducendo le probabilità di esercitare l'opzione. Tuttavia, noi riconosciamo la complessità di identificare i segnali trasmessi in modo indiretto dall'impresa docking e determinare la scadenza anticipata dell'opzione con conseguente effetto rebound.*

Originalità del paper. *La ricerca, ancora in corso, mira ad offrire la concettualizzazione della strategia grab-and-go alla luce della prospettiva teorica delle opzioni reali e, successivamente, proporre delle analisi empiriche (di tipo qualitativo-longitudinale). La ricerca affronta gli argomenti proposti da Min (2017) secondo cui la fine delle alleanze può essere attribuita alla differenza tra il valore creato da un'alleanza stessa e le aspettative dei partner. Concettualizziamo questa strategia in due fasi. Nella fase di grab, l'impresa focale decide di strutturare la cooperazione per acquisire conoscenze sul nuovo mercato geografico e le risorse necessarie per competere in tale mercato. Nella seconda fase - la fase go - l'impresa può decidere di entrare nel mercato attraverso flussi di integrazione verticale o orizzontale diretta, proporre un'operazione di business combination o uscire. In questo modo, contribuiamo alla letteratura esistente in due modi. In primo luogo, concettualizziamo il camouflage cooperativo che l'alleanza strategica può assumere. Sosteniamo che il momento della selezione del partner sia cruciale per attivare il processo e parlare della strategia grab and go. L'idea è che le imprese cercano di allearsi sfruttando una tattica di camuffamento, ovvero di aprire un'opzione strategica. Quindi, studi successivi alla luce della teoria delle opzioni reali potranno consentirci di identificare taluni criteri di partner selection che si rivelano cruciali per avviare tale processo strategico. Questa riflessione ha anche implicazioni per la struttura dell'alleanza. In particolare, nonostante non richieda investimenti significativi, le docking firm saranno inclini a strutturare un'alleanza strategica attraente per le docked firm. Questo tipo di alleanza non segue criteri altamente definiti, ma è la migliore forma che consente di avvicinarsi al partner rispetto agli obiettivi finali di ingresso e soprattutto di camuffamento. Questa ricerca potrà contribuire a identificare il ciclo di vita delle alleanze strategiche in cui la cooperazione iniziale è solo una fase transitoria o, di fatto, uno step di camuffamento. Da un punto di vista teorico questo significa rappresentare le alleanze strategiche come trampolino di lancio per la competizione in tempi successivi.*

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L'imprenditorialità femminile migrante nei business familiari

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Abstract

L'imprenditorialità femminile migrante costituisce un'area di studio dinamica e in costante evoluzione, distinguendosi per le sue peculiarità legate a contesti personali, strutturali e socioculturali. Gli studi evidenziano che questo tipo di imprenditoria è profondamente radicata in una struttura sociale e culturale, sostenuta da reti familiari ed etniche essenziali per l'avviamento e la gestione dell'attività. Nonostante l'aumento dell'interesse accademico, l'imprenditoria femminile migrante, in particolare nelle aziende familiari, rimane un'area ancora parzialmente esplorata. Utilizzando la lente teorica dell'embeddedness multipla, questo studio intende esplorare le complesse dinamiche che caratterizzano le imprese gestite da donne migranti, con un focus specifico sulle interazioni tra i fattori contestuali, familiari e individuali che contribuiscono al successo. Attraverso l'analisi approfondita delle esperienze di dieci imprenditrici migranti, il presente studio mira a delineare i fattori che sostengono o ostacolano i percorsi imprenditoriali, mettendo in luce l'importanza del contesto socio-economico e culturale, nonché delle reti di supporto familiare ed etnico, e del capitale umano individuale. L'aspetto innovativo di questa ricerca consiste nello studio dell'interconnessione tra questi elementi, evidenziando come la resilienza individuale e il sostegno etnico-familiare hanno facilitato l'adattamento a contesti imprenditoriali ostili. I risultati di questo studio mettono in luce una varietà di esperienze eterogenee, enfatizzando l'urgenza di adottare approcci più integrati e personalizzati nei programmi di supporto alle imprenditrici migranti. Questo studio non solo contribuisce al dibattito sull'imprenditorialità migrante ma fornisce spunti importanti per responsabili politici e attori del supporto imprenditoriale, sottolineando la necessità di migliorare l'accesso a risorse, formazione e reti di supporto. Infine, si evidenzia la necessità di ulteriori studi per esplorare la varietà di percorsi imprenditoriali migranti, al fine di promuovere un ecosistema più inclusivo e sostenibile.

Key words: *imprenditorialità femminile migrante; reti familiari ed etniche; aziende familiari; Embeddedness multipla; dinamiche imprenditoriali; sostenibilità aziendale*

Framing of the research. *L'importanza di esaminare l'imprenditorialità femminile migrante risiede nella sua correlazione con gli obiettivi fondamentali dell'Agenda 2030 delle Nazioni Unite per lo sviluppo sostenibile. In particolare, questa ricerca si allinea con l'obiettivo 5, che mira a "Raggiungere l'uguaglianza di genere ed emancipare tutte le donne e le ragazze", contribuendo all'emancipazione femminile attraverso la creazione di opportunità economiche e promuovendo l'uguaglianza di genere nel mondo dell'imprenditoria. L'obiettivo 8, volto a "Promuovere una crescita economica sostenuta, inclusiva e sostenibile, occupazione piena e produttiva e un lavoro dignitoso per tutti", viene supportato incoraggiando una crescita economica inclusiva attraverso l'innovazione e la creazione di posti di lavoro offerti dalle imprese guidate da donne migranti. Infine, con l'obiettivo 10, che si propone di "Ridurre le disuguaglianze sia all'interno dei Paesi che tra di loro", la ricerca promuove l'integrazione sociale e la riduzione delle disuguaglianze economiche e sociali, evidenziando il contributo significativo delle donne migranti all'economia e alla società dei paesi ospitanti e di origine. (Nazioni Unite, 2023).*

Le iniziative imprenditoriali da parte delle donne migranti non solo garantisce il sostentamento proprio e delle famiglie ma contribuisce anche allo sviluppo economico e sociale sia delle comunità ospitanti sia di quelle d'origine. (Chreim, Samia, et al. 2018)

Inoltre, la necessità di approfondire questi argomenti è accentuata dal contesto globale caratterizzato da veloci mutamenti geopolitici, economici e sociali. I recenti conflitti in Ucraina e Palestina, uniti alle ripercussioni della pandemia di Covid-19, hanno influenzato non solo i flussi migratori ma anche creato nuove opportunità e sfide per le imprenditrici migranti. In particolare, la crisi migratoria a seguito dell'invasione russa dell'Ucraina nel febbraio 2022 ha creato un ingente flusso migratorio verso l'Europa, mettendo sotto pressione le politiche di asilo e migrazione degli Stati membri dell'UE. Secondo le ultime stime al febbraio 2024 fornite da UNHCR, più di 6 milioni di profughi ucraini si trovano attualmente in Europa, con un notevole numero di essi che ha cercato asilo in paesi confinanti come Polonia,

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Repubblica Ceca, Bulgaria, e Romania, oltre che in destinazioni più lontane come Germania e Regno Unito. (UNHCR, 15 febbraio 2024)

In risposta all'ingente afflusso di rifugiati verso l'Europa, l'Unione Europea ha attivato il meccanismo di protezione temporanea. Questa misura straordinaria, introdotta per la prima volta con la Direttiva 2001/55/CE, mira a offrire un rifugio sicuro e un accesso rapido ai diritti fondamentali per coloro che fuggono da situazioni di emergenza. Questo strumento risulta particolarmente rilevante per le imprenditrici migranti, poiché questa protezione temporanea fornisce accesso immediato al mercato del lavoro, alloggio, istruzione per i loro figli, assistenza medica e sociale, creando così una base da cui possono avviare o continuare le proprie attività imprenditoriali.

La pandemia di Covid-19 ha imposto sfide senza precedenti, in particolare la chiusura delle frontiere ha colpito duramente le imprese gestite dai migranti, specialmente quelle dipendenti dal commercio transfrontaliero. Questo contesto ha accentuato le sfide già esistenti nel settore formale a causa di barriere socio-culturali, economiche e politiche, spingendo molti migranti ad operare in lavori informali. Le donne, in particolare, si impegnano in una serie di attività nel settore informale, a causa della possibilità di operare senza il bisogno di capitali ingenti o competenze specialistiche, utilizzando queste occupazioni come ultima risorsa per sopravvivere nell'ambiente urbano dinamico. (Jenberu, Kasse, 2021) Questo contesto ha reso alcune donne completamente dipendenti dai loro partner o dalle reti di supporto per la sopravvivenza, limitando la loro autonomia finanziaria e aumentando la loro vulnerabilità economica. Sebbene alcune donne abbiano ricevuto aiuti da ONG, chiese e reti sociali, l'accesso a tali supporti variava significativamente in base allo status di rifugiato, alla classe sociale e ad altri fattori intersezionali. Le donne con uno status legale meno stabile, come le richiedenti asilo, avevano meno probabilità di accedere agli aiuti governativi. Nonostante queste sfide, è emersa una forte solidarietà all'interno delle comunità di migranti, con esempi di condivisione di risorse limitate e supporto reciproco. (Mulu, 2021)

Gli sviluppi tecnologici, compreso l'uso dell'automazione, dell'intelligenza artificiale e della robotica, stanno trasformando i mercati globali, offrendo sia nuove opportunità che sfide significative, in particolare nei settori a bassa qualificazione dove i lavoratori migranti sono spesso impiegati. Inoltre, la disparità digitale, dovuta a limitazioni nell'accesso a internet, rappresenta un ostacolo significativo. Sebbene le nuove tecnologie creino nuove opportunità di lavoro, esse si concentrano in settori avanzati che potrebbero non essere facilmente accessibili ai migranti a causa della mancanza di programmi di formazione adeguati. (Kerwin, 2020) È quindi fondamentale che le istituzioni attuino iniziative di formazione incentrate sui migranti che non solo forniscano le competenze tecniche necessarie nei settori ad alta tecnologia, ma promuovano anche l'integrazione culturale e linguistica. Tuttavia, c'è il rischio che le iniziative specifiche di genere possano indirizzare le donne migranti verso settori stereotipati come la moda e il cucito, limitando la loro partecipazione a settori più innovativi e tecnologicamente avanzati. (Solano, 2023) L'attuazione di corsi di formazione specifici per i migranti incentrati sulle tecnologie avanzate potrebbe attrarre i migranti che hanno già elevate competenze tecniche.

La digitalizzazione, inoltre, offre alle imprenditrici migranti strumenti preziosi per mantenere e rafforzare i legami con i propri cari rimasti nel paese di origine. Le barriere dovute alla distanza possono essere superate attraverso sistemi di videochiamate che permettono loro di restare in costante contatto con le famiglie e le reti di supporto. La letteratura, ha inoltre evidenziato l'importanza dell'utilizzo dei social network e il ruolo della clientela prevalentemente femminile nel rendere il lavoro delle imprenditrici migranti più sicuro, sottolineando come le piattaforme digitali possano servire non solo per il marketing e la vendita ma anche come strumenti di empowerment e protezione. Questo non solo fornisce un sostegno emotivo cruciale, ma facilita anche la condivisione di conoscenze e risorse che possono essere estremamente importanti per l'avvio e la gestione delle loro imprese. Tale capacità di rimanere connessi non solo rafforza il tessuto sociale tra i paesi ma apre anche opportunità di business transnazionali, sfruttando i legami familiari ed etnici per esplorare nuovi mercati.

In aggiunta, le strategie adottate dalle imprenditrici per agire in contesti a rischio, come l'avvio di attività commerciali in sobborghi sicuri o l'impiego di figure maschili per gestire le operazioni quotidiane, rappresentano pratiche efficaci per mitigare i rischi connessi alla xenofobia. (Oumlil, 2023)

Purpose of the paper. Lo scopo di questo studio è quello di colmare una specifica lacuna nella letteratura esistente, esplorando in modo approfondito l'imprenditorialità migrante femminile all'interno delle aziende familiari. Attraverso l'esame dettagliato delle esperienze di dieci imprenditrici migranti, lo studio mira a identificare e comprendere i fattori contestuali, familiari e individuali che possono agevolare o impedire il loro successo imprenditoriale. La ricerca si propone di esplorare in modo critico come queste imprenditrici navigano tra le sfide e le opportunità nel loro percorso imprenditoriale, ponendo particolare enfasi sul ruolo del capitale sociale e sulle reti di supporto familiare ed etnico.

Attraverso un approccio metodologico qualitativo, basato su interviste approfondite, il presente lavoro cerca di offrire nuove prospettive sull'importanza delle dinamiche interne e esterne alle aziende familiari gestite da donne migranti. Questo lavoro si avvale della teoria dell'embeddedness come framework interpretativo per analizzare le esperienze delle imprenditrici migranti. Tale teoria, che enfatizza l'importanza del contesto sociale, economico e culturale in cui le imprese sono radicate, ha guidato l'elaborazione delle domande di intervista e l'interpretazione dei dati raccolti. Attraverso questo approccio teorico, si è cercato di comprendere come le relazioni personali e professionali, insieme alle condizioni socio-economiche e culturali, influenzino le decisioni imprenditoriali e il successo delle attività guidate da donne migranti.

Inoltre, il lavoro intende contribuire alla letteratura sull'imprenditorialità migrante evidenziando strategie efficaci e potenziali barriere, con l'obiettivo di suggerire politiche e programmi specifici che sostengano e promuovano l'imprenditorialità femminile migrante, consentendo a queste donne di raggiungere il successo imprenditoriale e

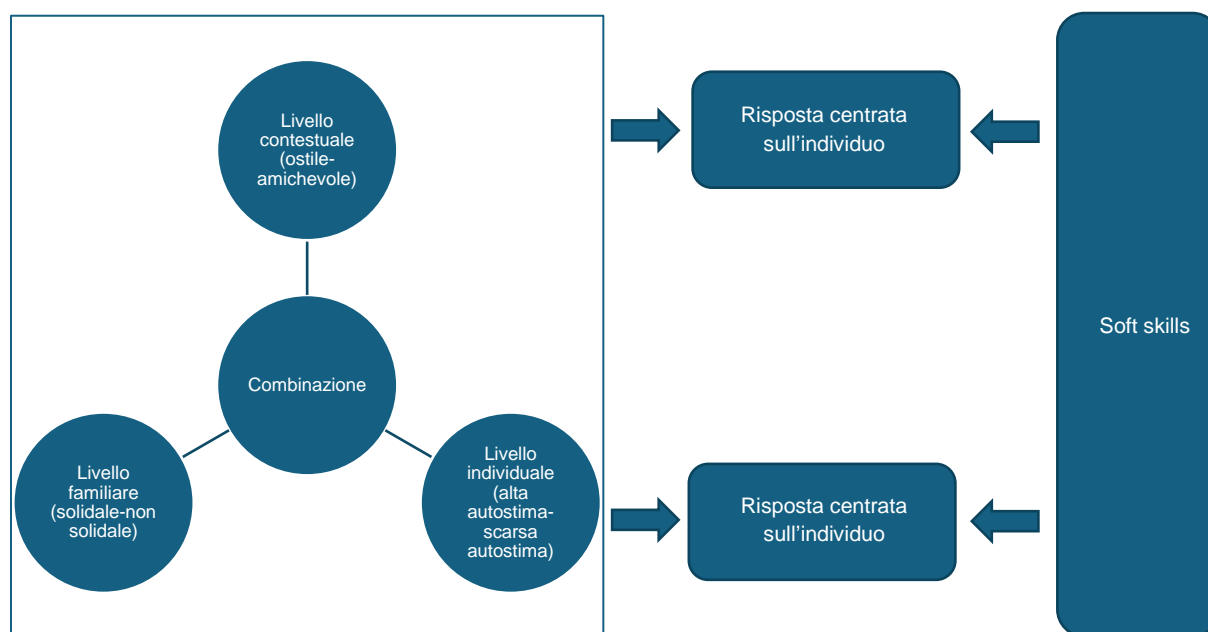
contribuire al tessuto economico e sociale delle comunità ospitanti. In particolare, le politiche di ricongiungimento familiare si rivelano essenziali, fornendo alle imprenditrici migranti il supporto indispensabile per avere successo in un contesto imprenditoriale competitivo e sconosciuto. La ricerca si pone, quindi, come un ponte tra teoria e pratica, cercando di evidenziare percorsi di successo e aree di miglioramento nel contesto dell'imprenditorialità migrante femminile.

Methodology. *Questo studio adotta un approccio di studio multi caso per esaminare in dettaglio le esperienze di dieci imprenditrici migranti, tutte attivamente coinvolte in aziende familiari all'interno della stessa regione italiana. Il campione è costituito da donne provenienti da diverse nazionalità, il che introduce una vasta gamma di background culturali e professionali. Con un'istruzione media elevata, il 70% delle partecipanti vanta un Master, mentre il 30% ha una laurea triennale. L'età media del gruppo è di 44,1 anni, segnalando un livello di maturità professionale che promette una ricchezza di esperienze e competenze. Dal punto di vista familiare, il campione mostra una divisione interessante: il 60% delle imprenditrici non ha figli, evidenziando potenzialmente minori vincoli personali, mentre il restante 40% ha due o più figli, suggerendo una complessità aggiuntiva nella gestione dell'equilibrio tra vita professionale e responsabilità familiari. Lo stato civile delle partecipanti si divide equamente, con il 60% sposato e il 40% single.*

La selezione mirata delle intervistate è stata basata sul loro significativo ruolo all'interno delle aziende familiari, assicurando che tutte fossero impegnate in posizioni di leadership o comunque apicali per l'attività. Al fine di rispettare i principi etici fondamentali, abbiamo ottenuto il consenso informato da ciascuna imprenditrice, garantendo la riservatezza e l'anonimato dei dati raccolti. Le interviste sono state condotte di persona, in inglese, per superare le barriere linguistiche e assicurare una comunicazione chiara. Questa scelta ha permesso una discussione fluida e aperta, offrendo alle partecipanti la possibilità di esprimersi liberamente e senza fraintendimenti.

La documentazione raccolta, sia primaria (interviste) che secondaria (relazioni aziendali, siti web, social media, e articoli di stampa), ha fornito una base di dati ricca e variegata per l'analisi. Adottando un approccio induttivo, due codificatori indipendenti hanno analizzato il materiale, identificando temi emergenti e conducendo un'analisi incrociata per evidenziare modelli e divergenze tra i casi. Qualsiasi potenziale discrepanza nell'interpretazione dei dati sarebbe stata risolta con il parere di un terzo codificatore. Tuttavia, la coerenza delle analisi ha precluso la necessità di tale misura, confermando l'oggettività del processo di codifica.

Results. *I risultati dello studio evidenziano l'importanza delle interazioni tra contesto, famiglia e livello individuale nell'imprenditorialità femminile migrante. La combinazione di queste dimensioni crea delle esperienze uniche che influenzano profondamente il percorso imprenditoriale di ciascuna donna. Queste diversità hanno portato a due prospettive sulle azioni imprenditoriali: una incentrata sull'individuo e l'altra sull'azienda. In particola il contesto può essere percepito come amichevole (“Prospero in un ambiente che mi accoglie calorosamente mentre costruisco i miei sogni in questa comunità amichevole!”) o ostile (“Sento che la mia presenza qui non è gradita”), la famiglia come solidale (“La mia famiglia è unita dall'amore, colmando le distanze con calore e sostegno alla mia iniziativa imprenditoriale”) o non solidale (“...la mia famiglia è lontana, quindi capisco di non poter ottenere un vero aiuto, ma non ricevo nemmeno una parola di incoraggiamento da loro, e questo mi rende triste”), e il livello individuale può essere caratterizzato da un'alta autostima (“Credo in me stessa e navigo con fiducia la mia sfida imprenditoriale, trasformando le difficoltà in opportunità”) o da una bassa autostima (“Non sono sicura delle mie abilità, ma mi sforzo di superare la mia mancanza di fiducia mentre affronto la sfida imprenditoriale”). Sulla base di queste percezioni, le imprenditrici migranti formulano una risposta cognitiva specifica, intenzionale o meno, facendo leva su azioni imprenditoriali ben definite, centrate sull'individuo (“Spesso, mi sento sola contro tutti. C'è sfiducia qui, e la mia famiglia è lontana (...) Per affrontare queste sfide, sto lavorando su me stessa. (...) Frequento corsi per specializzarmi, mi sforzo di acquisire ancora più competenze (...) per dimostrare a me stessa e agli altri che valgo.”) o sull'azienda (“Sento di avere una base solida su cui continuare a crescere la mia attività. La mia famiglia mi sostiene, sono apprezzata qui, e mi sento forte, come una leonessa. (...) La mia attività crescerà ancora di più.”). Queste risposte sembrano essere il risultato di specifiche soft skills esibite dalle donne durante le loro narrazioni. I risultati esposti in questo studio forniscono una panoramica significativa delle sfide e delle opportunità incontrate dalle imprenditrici migranti. È importante notare che questa ricerca è attualmente un work in progress. Progetti futuri includeranno l'ampliamento del campione di studio e un'indagine più approfondita sulle implicazioni teoriche e pratiche delle nostre scoperte.*



Research limitations. *Sebbene lo studio mostri intuizioni interessanti, è importante riconoscere alcune limitazioni che ne circoscrivono la portata e la generalizzabilità. La prima limitazione riguarda la dimensione del campione, con soli dieci interviste la rappresentatività è limitata, il che può restringere la capacità di generalizzare i risultati a un contesto più ampio. Nonostante le esperienze dettagliate forniscano approfondimenti significativi, studi futuri potrebbero beneficiare dell'inclusione di un numero maggiore di partecipanti per potenziare e confermare i risultati dello studio.*

Un secondo aspetto da prendere in considerazione è l'assenza di un'analisi approfondita sugli effetti delle dimensioni aziendali. Lo studio non ha esplorato in dettaglio come le diverse dimensioni aziendali possano influenzare le dinamiche imprenditoriali individuate. Questo rappresenta una variabile da considerare nelle ricerche future, in quanto una comprensione più ampia di queste relazioni potrebbe offrire ulteriori spunti per il sostegno e lo sviluppo dell'imprenditorialità femminile migrante.

Un ulteriore aspetto, la concentrazione su una regione specifica dell'Italia, sebbene abbia permesso un'indagine approfondita, limita la generalizzabilità dei risultati ad altri contesti geografici. Le particolarità culturali, economiche e sociali della regione esaminata possono aver influito sulle esperienze delle imprenditrici in modi che potrebbero non essere replicabili altrove. Pertanto, è auspicabile che ricerche future esplorino l'imprenditorialità femminile migrante in diverse aree geografiche per valutare la consistenza delle nostre scoperte attraverso vari contesti.

Infine, un'ulteriore area di indagine che emerge particolarmente rilevante riguarda l'analisi comparativa sull'ambientamento delle donne migranti di una stessa nazionalità nei diversi paesi di destinazione. Lo studio non ha approfondito come specifiche comunità nazionali affrontano e si adattano alle sfide imprenditoriali nei contesti in cui si trasferiscono. Pertanto, sarebbe di grande interesse per le ricerche future esaminare in modo più dettagliato come le imprenditrici migranti, provenienti da uno stesso paese di origine, si inseriscono nell'ecosistema imprenditoriale e sociale dei loro paesi ospitanti.

Managerial implications. *I risultati dello studio forniscono un supporto significativo alle imprenditrici e alle professioniste migranti, comprese le consulenti e le altre titolari d'impresa, offrendo indicazioni preziose sui fattori che possono favorire o ostacolare i comportamenti imprenditoriali. Prevedendo le potenziali preoccupazioni e i problemi, in particolare le barriere contestuali, familiari e individuali, le imprenditrici migranti possono affrontare efficacemente le sfide all'interno delle aziende familiari transnazionali.*

È fondamentale sottolineare il vantaggio che le aziende familiari transnazionali possano trarre dal mantenimento di legami commerciali non solo con il proprio Paese d'origine ma anche esplorando nuovi mercati. Grazie alle loro esperienze di vita uniche, i migranti si trovano in una posizione privilegiata per gestire e sviluppare attività imprenditoriali che superano i confini nazionali. Tuttavia, gli studiosi hanno evidenziato che le esperienze migratorie, pur essendo una risorsa potenziale, non garantisce automaticamente il successo imprenditoriale. È pertanto necessario che le imprenditrici migranti siano supportate con programmi di formazione all'imprenditoria che riconoscano e valorizzino le loro conoscenze e competenze specifiche, includendo moduli dedicati alla gestione delle attività transfrontaliere, all'accesso a reti internazionali e alla comprensione delle varie normative commerciali, potenziando così la loro capacità di massimizzare le risorse a disposizione.

I risultati dello studio enfatizzano anche la necessità di un'analisi più sfumata che riconosca la diversità delle esperienze migranti, sottolineando l'importanza di evitare generalizzazioni. (Mittmasser, 2022) Inoltre, il ruolo critico dei politici è fondamentale nell'implementazione di misure proattive che favoriscano programmi di formazione all'imprenditorialità su misura, essenziali per potenziare le capacità individuali e mitigare gli impatti di ambienti sfidanti.

L'importanza delle politiche di ricongiungimento familiare svolge un ruolo fondamentale nel supportare queste donne a superare le barriere familiari, che spesso rappresentano un ostacolo significativo al loro percorso imprenditoriale. La possibilità del ricongiungimento familiare non solo offre un supporto emotivo indispensabile ma anche una maggiore stabilità e sicurezza, elementi cruciali per l'avviamento e la crescita di imprese in un paese straniero. Tuttavia, il ricongiungimento familiare porta a volte a restrizioni aggiuntive, specialmente in contesti dove la presenza fisica di membri della famiglia, può comportare limitazioni culturali o sociali. In tali situazioni, potrebbe essere preferibile incentivare programmi che promuovano un uso efficace dei social media per mantenere i legami familiari. Questa strategia permetterebbe di evitare le restrizioni che possono sorgere dal ricongiungimento fisico, offrendo alle donne migranti la possibilità di mantenere relazioni familiari stabili e di supporto attraverso la comunicazione digitale, senza incontrare gli ostacoli imposti da determinate norme culturali.

Allo stesso modo, la semplificazione delle procedure burocratiche relative all'avvio e alla gestione di imprese può ridurre significativamente il carico amministrativo, consentendo loro di concentrarsi maggiormente sullo sviluppo e l'espansione delle loro attività.

Un ulteriore aspetto cruciale evidenziato dallo studio riguarda l'importanza del sostegno fornito all'interno delle imprese sociali gestite da donne migranti. Queste realtà non solo facilitano l'ingresso delle nuove imprenditrici nel mercato ma offrono anche un supporto emotivo fondamentale, specialmente in momenti di vulnerabilità personale come il divorzio o la perdita del coniuge. L'esistenza di queste reti di supporto dimostra come la solidarietà femminile possa superare i confini professionali, rafforzando il benessere e la resilienza delle imprenditrici. Di conseguenza, è essenziale che le politiche favoriscano la creazione e lo sviluppo di queste iniziative, facilitando l'accesso a finanziamenti e benefici fiscali, per sostenere l'integrazione e il successo delle imprenditrici migranti nei tessuti economici locali e contribuire al loro benessere personale.

Originality of the paper. *Questo studio si distingue dalle ricerche precedenti, che spesso hanno trattato separatamente il contesto e il livello individuale, evidenziando invece la loro interconnessione e coesistenza. In particolare, questa ricerca approfondisce le esperienze delle imprenditrici migranti affermate nel contesto delle imprese familiari, il che aggiunge complessità alle loro interazioni con ambienti multipli - il loro Paese d'origine e il Paese ospitante. Attraverso questo approccio, si offre una prospettiva unica per comprendere le percezioni sfumate del contesto, variando dalla cordialità all'ostilità. Le dinamiche cognitive rivelate, strettamente legate alle dinamiche dell'azienda familiare, illustrano le strategie di adattamento impiegate da questi imprenditori per affrontare le sfide e raggiungere il successo. Incrociando l'ambito dell'azienda familiare con fattori personali e contestuali, il presente studio arricchisce la comprensione di come le imprenditrici migranti di successo manovrino attraverso le complesse dinamiche di interazione, illuminando il loro percorso imprenditoriale distintivo tra diversi contesti culturali e commerciali.*

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When algorithms help cross-cultural management educators: a proposed supportive tool

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Abstract

This study explores the conceptualization and design of a supportive tool aiming at assessing the student Cross-Cultural Competence (CCC) within the context of higher education. Employing Principal Component Analysis (PCA) and non-hierarchical Cluster Analysis (non-HCA), the research aims to discern patterns and similarities in student data to aid in the conceptualization of the supportive tool for cross-cultural management educators. It coherently to the relevant literature discourse examines the impact of several factors, including experiences in foreign countries and participation in academic courses with a cross-cultural emphasis. This algorithm is also designed to assist in creating tailored strategies for enhancing students' CCC by exploiting identified cluster compositions. Data was gathered through a specifically designed survey based on literary research orientations and distributed to students across bachelor's and master's degree programs at the University of Salerno. The PCA identified three principal components exerting a significant influence on students' capability to navigate diverse cultural environments. Subsequent non-HCA defined distinct student traits, thereby providing deeper insights into the assessment of CCC. The algorithm, based upon these statistical methodologies, can enhance the automation of future survey analyses across diverse contexts. This advancement provides cross-cultural management educators with a supportive tool for fostering CCC through the deployment of customized educational strategies, tailored to the unique attributes of the students.

Key words: principal component analysis; non-hierarchical cluster analysis; assessment; cross-cultural competence; cultural intelligence; algorithm

Framing of the research. *In the evolving landscape of higher education, the imperative to cultivate cross-cultural competence (CCC) among students has never been more pronounced. The university environment emerges as a critical opportunity for the CCC education among students, equipping them with the requisite skills to effectively engage in international contexts. CCC has been defined by Gertsen (1990) as the ability of individuals to function effectively within the context of another culture. Cross-cultural training programs frequently focus on elements conducive to brief instructional periods, such as specific behavioral skills and knowledge that can be readily assessed, often at the expense of a more comprehensive cultural understanding and the development of metacognitive abilities (Johnson et al., 2006). Earley & Ang (2003) broadened the conventional notion of CCC, incorporating cognitive, behavioral, and motivational dimensions but also a metacognitive component, thereby introducing the concept of CQ. It has been defined as the ability of individuals to effectively navigate and manage interactions within culturally diverse environments (Earley & Ang, 2003) and this construct provides insight into variance in intercultural competence (Eisenberg et al., 2013). The CQ is a multidimensional construct aggregated from four dimensions representing different capabilities. Cognitive CQ regard explicit knowledge of values, norms, and practices in various cultures (Earley & Ang, 2003). It also includes knowledge of the social, economic, and legal systems of different cultures. Metacognitive CQ refers to an individual's level of conscious cultural awareness and it relies on advanced cognitive strategies and in-depth information processing (Van Dyne et al., 2012). This dimension is associated with awareness of others' cultural preferences and intentions both before and during cross-cultural interaction. Motivational CQ reflects the ability to direct attention and energy toward learning about and performing effectively in situations marked by cultural differences (Ang et al., 2007). A high level of motivational CQ enables individuals to more effectively manage both the emotional and cognitive aspects of multicultural situations, which can often generate uncertainty and anxiety (Van Dyne et al., 2012). Furthermore, they demonstrate a keen interest in learning about various aspects of different cultures and display increased confidence in adapting to culturally diverse situations (Eisenberg et al., 2013). The last dimension, the behavioral CQ refers to the ability to display*

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suitable verbal and non-verbal behaviors when interacting with culturally diverse individuals. It includes a wide and adaptable range of behaviors, including aspects such as tone, gestures, personal space, dress codes, and time management, which are appropriate for intercultural interactions (Eisenberg et al., 2013). The development of culturally intelligent resources is achievable through a positive approach towards diversity, with cross-cultural educators playing a pivotal role in fostering effective interactions among individuals from varied cultural backgrounds. CQ is dynamic, and individuals can enhance their competences through a range of strategies, including training and coaching programs, personalized development plans, or, most significantly, through direct experiences where participants are immersed in a culturally distinct environment (Rand, 2015). Griffith et al. (2016) highlighted different evidence of reliability and validity of intercultural competence assessment including the Cultural Intelligence Scale (CQS) (Ang et al., 2007). The internationalization of academic curricula and exposure to diverse cultures have been instrumental in creating opportunities for significant transformations in education and learning, thereby enhancing international cross-fertilization, but to understand how to develop customized strategies tailored to the unique needs of students, it is essential to identify common patterns of characteristics that enable the definition of objectives for each student group.

Purpose of the paper. The purpose of the paper is search for similarities and hidden patterns between students, using PCA and a non-HCA to identify key components contributing to CCC of the students to develop a technological tool: an algorithm designed to serve as an auxiliary resource for cross-cultural educators. This algorithm aims to facilitate the formulation of targeted strategies for the future enhancement of CCC among students, by interpreting and applying the patterns that delineate the compositions of identified clusters thought the analysis of the impact of study abroad experiences, the number of countries visited, and participation in cross-cultural related courses.

Methodology. During the four-year period 2019-2022, a questionnaire was administered by the 3CLab - Cross Cultural Competence Learning and Education research lab at the University of Salerno with the aim of measuring the CQ level of university students. The survey was implemented via the CAWI (Computer Assisted Web Interviewing) approach. The choice of this methodology stems from the possibility of constructing a tailor-made questionnaire, asking questions targeted to the research objectives through a clear, easy-to-complete interface that can be used at anytime and anywhere in the world (Amaturo, 2012). The research sample consisted of university students enrolled in both bachelor's and master's degree courses.

The questionnaire is divided into three different sections. The first part of the form includes questions referring to socio-demographic information of the respondents: gender, age, country of origin, country where the pre-university education was completed to ascertain whether it was conducted abroad. The second part is aimed at investigating the enabling factors for the development of students' CCC. Based on the literature, it was determined that the questionnaire should incorporate a question about experiences abroad lasting at least one month. Several studies have been interested in the results obtained from short-term experiences (Chieffo & Griffiths, 2004; Dwyer, 2004) and according to Fowers and Davidov (2006), there is strong evidence of the effectiveness of this type of experience in promoting intercultural interest, knowledge, and cultural awareness. Moreover, having visited different countries also appears to be an additional factor conditioning CCC. For this reason, students were asked to indicate the number of countries they had visited. The questionnaire also includes questions regarding whether students attended a specific course related to cross-cultural topics. Several studies have highlighted the positive impact that courses focused on cross-cultural issues can have improving students' CQ levels (Ramsey & Lorenz, 2016; Eisenberg et al., 2013; MacNab, 2012). The survey concludes with the self-assessment model developed by Ang et al. (2007), the CQS which allows us to define the students' CQ level. It consists of 20 items, sorted by the four dimensions of Cultural Intelligence (Metacognitive, Cognitive, Motivational and Behavioral), which define the overall CQ score and level for each dimension. Using a seven-mode Likert scale, students define their degree of agreement/disagreement with the proposed statements following the model of Van Dyne et al. (2015), whose research has supported the predictive validity of CQ with student self-reported measures. To develop the CQS, Ang et al. (2007) reviewed the literature on CQ and intercultural competence. They supplemented it with the contribution of several interviews with eight managers with extensive global experience. Different fields of study were used to determine the specific items. In particular, the authors referred to educational and cognitive psychology (O'Neil & Abedi, 1996), which assesses the awareness, planning, regulation, monitoring, and control of cognitive thinking and learning processes; the Human Relation Areas (Murdock's, 1987; Triandis, 1994), including the economic, legal and social systems of other cultures; the intrinsic satisfaction theory (Deci & Ryan, 1985), auto-efficacy in the intercultural context theory (Bandura, 2002) and intercultural communication for verbal and non-verbal flexibility (Hall, 1959; Gudykunst et al., 1988) were also assessed. The authors (Ang et al., 2007) demonstrated a good fit of the scale between the four-factor model and a sample of Singapore university students. Furthermore, they verified the reliability of the scale with three different studies. A first study provided cross-validation of the Cultural Intelligence Scale (CQS) across different samples, a second study assessed its generalization over time through cross-validation with a subset of respondents four months apart, and the last study assessed generalization with a cross-comparison of a sample from the United States versus the Singapore sample. A validation analysis of the scale was also conducted regarding the Italian version of the 20 items, providing further empirical support for the reliability of the CQS and the consistency of the four specific dimensions of cultural intelligence (Gozzoli & Gazzaroli, 2018).

The sample under consideration in this study comprises 137 individuals. The gender distribution within the sample includes 81 female and 56 male respondents. Age-wise, the sample is segmented as follows: approximately 48.18% of the individuals are aged between 18 to 22 years, 40.88% are within the 23 to 26 age brackets, 7.30% fall into the 27 to 30 range, and 3.65% are older than 30 years. These percentages offer a detailed view of the age composition of the sample. Regarding nationality, the sample features a broad diversity, encompassing n.3 individuals from Armenia, n.1 from

Belarus, n.1 from the Czech Republic, n.6 from Finland, n.1 from Greece, n.1 from Hungary, n.9 from India, n.105 from Italy, n.5 from Romania, n.1 from Spain, n.1 from Uganda, and n.3 from Ukraine.

The Principal Component Analysis (PCA) is a multivariate data analysis technique used to study, explore, and represent the variation present in the dataset using a small number of factors (PC). This allows the identification of one or more latent PCs that capture the similarities between the variables (Barbaranelli & D'Olimpio, 2006). It's a powerful tool to examine the correlation among variables in the dataset. It is based on the direct calculation of eigenvalues and eigenvectors with the aim of replacing the old observed variables with new variables that are a linear combination of the former that summarize their information. The components thus represent linear combinations of the original variables explaining the maximum variance (i.e. summarizing as much information as possible of the original variables) (Barbaranelli & D'Olimpio, 2006).

The analyses were conducted using SPSS software in its version 29 and the list of the variables selected from the survey to conduct the PCA are presented in Table 1. The number of PCs to be extracted has been defined by the Kaiser criterion (Kaiser, 1960; Barbaranelli & D'Olimpio, 2006): eigenvalue higher than 1 are considered significant in the PCA. A Varimax type rotation (maximum interaction for coverage equal to 250) with Kaiser normalization has been applied to the variables so that the PCs calculated are linear combinations of the original variables. In addition, the Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity indicate that the model is adequate (Kaiser, 1970; 1974; Bartlett, 1954). Among the various solutions documented in the literature, the cluster analysis was performed using the k-means methodology. This is the most widespread non-hierarchical clustering method (Barbaranelli & D'Olimpio, 2006) and involves solving an algorithm for minimizing the distances between all possible centroids. It is a point-based clustering approach that initiates with the cluster centers positioned arbitrarily and continues by iteratively relocating the cluster centers at each step to reduce the clustering error (Likas et al., 2003). It produces changes in the partition by moving objects from one cluster to another based on Euclidean distance. The assignment of individual objects to groups is done in a way that maximizes the ratio between the "between-groups" variability and the "within-groups" variability, according to the criterion of "minimum variability within groups" and "maximum variability between groups" (Barbaranelli & D'Olimpio, 2006).

Table 1. Variables

Variables	Type	Information acquired
Education Abroad	Dichotomous variable 1: Different; 0: Equal	Whether the respondent pursued their non-college education abroad.
Period Abroad	Dichotomous variable 1: Yes; 0: No	Assessment of the duration of time spent abroad, with a minimum period of one month.
Number of countries visited	Nominal variable 1: 0-3; 2: 4-7 countries; 3: >8 countries	Evaluation of the total number of countries visited.
Cross-cultural courses attended	Dichotomous variable 1: Yes; 0: No	Respondent's attendance of at least one cross-cultural management, competence, or similar course
Mot CQ	Likert scale (1-7)	Motivational dimension of CQ
Cog CQ	Likert scale (1-7)	Cognitive dimension of CQ
Meta CQ	Likert scale (1-7)	Metacognitive dimension of CQ
Beh CQ	Likert scale (1-7)	Behavioral dimension of CQ

Results. The main results of our research are organized as follows. The first session is about the results of the PCA and non-HCA; the second session is focused on the formalized algorithm.

PCA and non-HCA results

Descriptive statistics regarding this sample are detailed in Table 2.

Table 2. Descriptive statistics

	Minimum	Maximum	Mean	Std. Deviation	Variance
Date	2019	2022	2020.31	.765	.585
Sex	0	1	.41	.493	.243
Age	0	3	.66	.770	.592
Cross-cultural courses attended	0	1	.19	.394	.155
Attended school	0	1	.07	.249	.062
Number of countries visited	1	3	1.55	.663	.440
Period Abroad	0	1	.32	.469	.220
Meta CQ	1.00	7.00	4.9307	1.23771	1.532
Cog CQ	1.00	7.00	4.06569	1.23972	1.537
Mot CQ	1.0	7.00	5.591	1.1378	1.295
Beh CQ	1.0	7.00	4.745	1.3741	1.888
CQ Overall	1.00	7.00	4.7898	.95452	.911

In our dataset, the eigenvalue continues to have a value >1 where it indicates 3 components representing a total variance of approximately 62%. For this region, it was decided to perform PCA with a 3-factor model (Table 3). Since the original variables may exist on various measurement scales, they are typically centered and scaled. KMO's values is close to the threshold value 0.7 representing the presence of sufficient correlation between the variables and the Barlett's test of sphericity is significant (Table 4). This constitutes an inferential test aimed at determining whether the variables are independent. Since the results of the test prove to be significant, it confirms the feasibility of a PCA. In summary, the PCA has revealed a model that consists of three distinct PCs. In the process of obtaining the rotated component matrix, which elucidates the composition of the PCs as presented in Table 5, we have excluded cross-loadings below 0.3 and grouped the factors by size.

Therefore, these PCs were analyzed to ascertain their impact on cross-cultural competence: Component 1 encompass the 4 dimensions of the CQ (as expected given the validation of the CQS above mentioned). Component 2 includes both the duration of time spent abroad for at least one month and the total number of countries visited. The latter, Component 3, consists of participation in cross-cultural training courses and includes any form of pre-university education undertaken in a foreign country. This three new PCs were saved in SPSS and normalized using the regression method to allow aggregate values and subsequent analyses: non-HCA.

Table 3. Total Variance Explained and application of the Kaiser criterion.

Component	Total	Initial Eigenvalues		Extraction Sums of Squared Loadings			Rotation Sum Squared Loadings		
		% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.437	30.458	30.458	2.437	30.458	30.458	2.357	29.465	29.465
2	1.390	17.373	47.831	1.390	17.373	47.831	1.440	17.997	47.462
3	1.137	14.217	62.048	1.137	14.217	62.048	1.167	14.586	62.048
4	.920	11.504	73.552						
5	.647	8.084	81.636						
6	.573	7.165	88.801						
7	.497	6.214	95.015						
8	.399	4.985	100.000						

Table 4. KMO and Barlett's test of Sphericity

Kaiser-Meyer-Olkin Measure of Sample Adequacy		.698
Barlett's test of Sphericity	Approx. - Chi Square	178.219
	Df	28
	Sig.	<.001

Table 5. Rotated Component Matrix

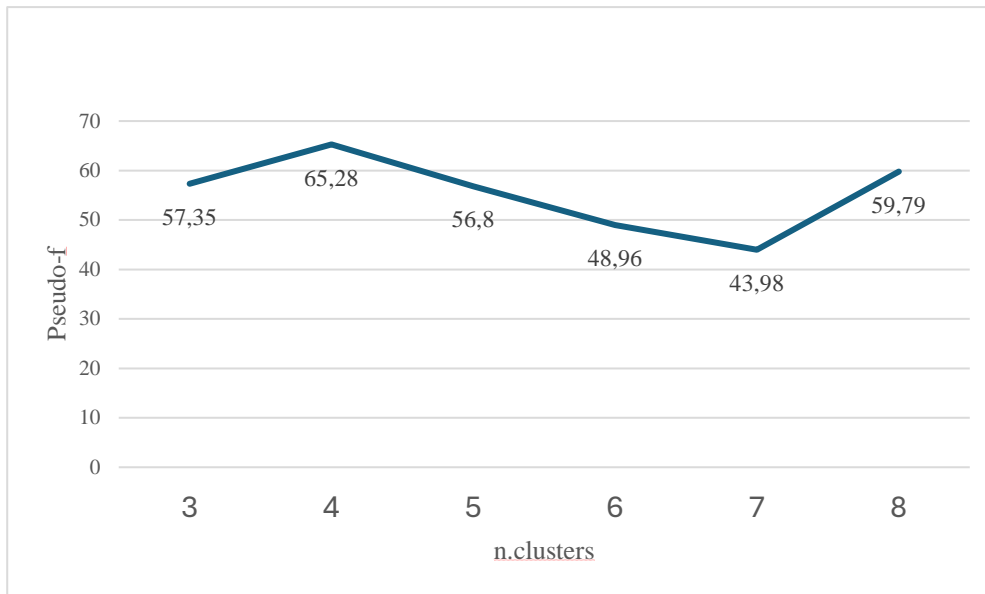
	Component		
	1	2	3
Meta CQ	.797		
Beh CQ	.784		
Mot CQ	.769		
Cog CQ	.701		
Number of countries visited		.822	
Education Abroad		.791	
Cross-cultural courses attended			.733
Attended school			.702

Based on the PCA conducted, we used the PCs as new variables to proceed with the definition of the clusters. To ascertain the optimal number of clusters, we empirically calculated and interpreted the pseudo-F statistic, which reaches its maximum value corresponding to the optimal cluster number (Calinski et al., 1974). The pseudo-F statistic has been computed as the ratio between the sum of the mean squares of the clusters and the mean square of the error, and it refers to the test statistic used to evaluate the overall significance of a cluster model. This type of test is associated with the analysis of variance (ANOVA) and is utilized to assess whether there are significant differences between the groups of data created through clustering maximizing the differences among cases in the different clusters. The hypothesis positing four clusters exhibited a score of 65.28, the highest among all other options considered (figure 1), and Table 6 displays that the model's significant. The four determined clusters are composed of, respectively, 55, 40, 29, and 13 units.

Table 6. Anova

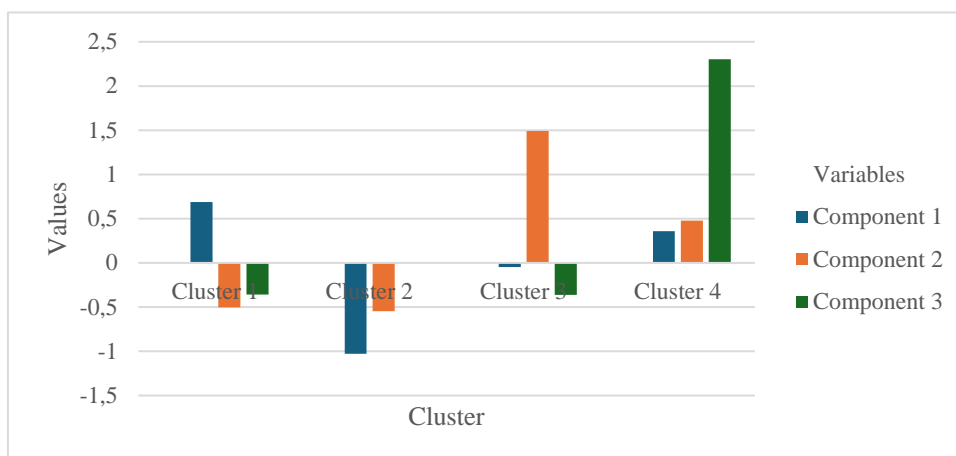
	Cluster		Error		F	Sig.
	Mean square	df	Mean square	df		
Component 1	23.269	3	.498	133	46.755	<.001
Component 2	31.108	3	.321	133	96.648	<.001
Component 3	26.635	3	.422	133	63.151	<.001

Figure 1. Progression of Pseudo-F Statistical Measures



The findings of this study reveal the development and validation of a three-factor tool derived from the PCA, which facilitates a nuanced understanding of CCC among university students. This innovative approach delineates the intricate PCs, enabling a detailed exploration of the constituents of cultural competence. Subsequently, through the application of k-means cluster analysis, the research methodology allows for the identification of distinct profiles within the student population. Our classification based on the identified PCs allowed us to determine 4 clusters that uncovers common patterns among subsets of the population, shedding light on the variegated landscape of CCC within a diverse academic cohort. The four clusters exhibit distinct characteristics as depicted in Figure 3. Specifically, the subjects within Cluster 1 (n.55), have been grouped together due to their significantly higher levels of CQ compared to the other components. This could suggest that for these students, it might prove beneficial to plan activities to be carried out abroad and participation in CCC training. Conversely, Cluster 2 comprises 40 subjects who exhibit low levels across all PCs, particularly about the CQ and the experience abroad. This indicates that rather than participation in CCC courses, it would be beneficial to engage mechanisms capable of enhancing the overall level of CQ and to recommend their participation in programs, such as Erasmus, to effectively improve their CCC. Cluster 3 is distinguished by 29 subjects who excel notably in their experiences abroad. This cluster indicates the necessity for these individuals to formalize their experiences through specific CCC related courses to also increase their own CQ. Suggesting new experiences abroad would be superfluous. The latter cluster represents a “niche” group of subjects, evidenced by its smaller size relative to the others (n.13). These are students who have reported significant levels across all three detected PCs.

Figure 2. Final Cluster Centers



The proposed algorithm as supportive tool for cross cultural management educator

This methodology was outlined as a supportive tool through an algorithm that can help cross-cultural management educators. Figure 3 shows the pseudocode that delineates the proposed algorithm that initially applies PCA to the normalized dataset to identify the main axes of variance. It employs statistical tests-KMO and Bartlett's-to verify the

data's suitability for PCA. On meeting the threshold criteria, it extracts significant components, applies varimax rotation to maximize variance, and computes component scores. Subsequently, it performs k-means clustering to partition the data into optimal clusters, determined by a pseudo-F statistic. The final output presents the clustered data. Employing these statistical methodologies, the presented algorithm significantly contributes to the automation of analytical processes in survey research across a spectrum of contexts. It can help the deployment of specific strategies that are intricately customized to align with the distinct characteristics and cultural backgrounds of the students, thereby enhancing educational outcomes in a cross-cultural framework.

Figure 3. Pseudocode for Principal Component Analysis and k-Means Clustering

```

Data: Data to be analyzed.
Result: Component scores and clustering results.
load_data(file_path);
Function perform_PCA(data, variables)
| data_normalized ← normalize(data[variables]);
| covariance_matrix ← calculate_covariance(data_normalized);
| eigenvalues, eigenvectors ←
|   eigen_decomposition(covariance_matrix);
| kmo_value, kmo_model ← calculate_KMO(data[variables]);
| bartlett_test_value, bartlett_test_p_value ←
|   bartlett_sphericity_test(data[variables]);
| if kmo_value > threshold_KMO and bartlett_test_p_value <
|   threshold_significance then
| | selected_components ← select_components(eigenvalues);
| | rotated_components ← varimax_rotation(eigenvectors,
| |   selected_components);
| | component_scores ← compute_scores(data_normalized,
| |   rotated_components, selected_components);
| | return component_scores;
| end
| else
| | return None;
| end
Function perform_k_means(data, num_clusters)
| centers ← initialize_centers(data, num_clusters);
| clusters ← assign_clusters(data, centers);
| while not convergence(centers, clusters) do
| | centers ← update_centers(clusters);
| | clusters ← assign_clusters(data, centers);
| end
| return clusters;
Function
| data ← load_data(file_path);
| variables ← ["Meta CQ", "Cog CQ", "Mot CQ", "Beh CQ",
|   "Number of countries visited", "Education Abroad",
|   "Cross-cultural courses attended"];
| pca_scores ← perform_PCA(data, variables);
| if pca_scores is not None then
| | optimal_num_clusters ← calculate_pseudo_F(pca_scores);
| | cluster_results ← perform_k_means(pca_scores,
| |   optimal_num_clusters);
| | output_results(cluster_results);
| end

```

Research limitations. The research is conducted on a unique sample collected by the 3CLab – Cross Cultural Competence Learning & Education. The specificity of the sample might limit the generalizability of the findings to other population. In this case, our analysis was confined to a sample of students, predominantly of Italian origin. Expanding the sample, both in terms of cultural diversity and by incorporating the analysis of managers and professionals could prove to be of significant interest for future research endeavors. Such an enlargement of the sample scope would not only enrich the understanding of CCC across different societal sectors but also enhance the generalizability and applicability of our findings to a broader context. Moreover, the selection of variables to be examined was guided by the existing literature on factors capable of influencing CCC, as highlighted in the discussion. However, this approach may not preclude the omission of additional variables that could be beneficial to consider. This algorithm serves as a comprehensive foundation, setting the stage for the future expansion and enhancement of a comprehensive supportive tool designed for cross-cultural management educators, anticipating continuous improvements and expansions in its functionalities.

Managerial implications. This analysis paves the way for the formulation of tailored developmental strategies, aimed at enhancing CCC of students on a cluster-by-cluster basis. The clusters, in terms of composition and size, can vary based on the sample being analyzed, but this methodological setup remains significantly useful for determining different groups

and customizing specific improvement strategies for them. Moreover, the defined algorithm makes it possible to automate these statistical steps to quickly determine the different clusters and thus define customized CCC development strategies. In doing so, the research offers practical implications for the design of targeted interventions to foster CCC among university students and for managers. The strategic application of this three-factor PCA and subsequent cluster analysis exemplifies a forward-thinking approach to educational research, affirming the importance of personalized learning pathways in the cultivation of global citizens equipped to navigate the complexities of a multicultural world.

Originality of the paper. To the best of the authors' knowledge, this represents a first attempt to apply PCA techniques and non-HCA in an algorithm to identify common patterns among students in order to develop and suggest future specific intervention strategies to increase CCC.

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Decoding the future: entrepreneurial visions on AI's role in international strategic decisions

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Abstract

In an era of rapid digital transformation, AI emerges as a pivotal technology that enhances decision-making processes, productivity, and competitiveness across industries, especially in the international context. The study aims to elucidate how entrepreneurs adopt AI technologies to navigate international strategic decisions (ISDs), focusing mainly on small and medium-sized enterprises (SMEs). The paper presents insights from interviews conducted with CEOs and export managers of an Italian manufacturing SME through a qualitative research approach. Findings suggest a nascent integration of AI within SMEs, primarily delayed by a lack of understanding and trust in AI's capabilities and the considerable investments required for technology adoption and personnel training. Despite these barriers, there is a growing interest in leveraging AI for international market analysis, strategic decision-making, and optimizing operational efficiencies. The paper underlines the critical need for educational initiatives and support mechanisms to increase AI adoption among SMEs, highlighting AI's potential to enhance SMEs' international competitiveness. The study contributes valuable perspectives to the intersection of AI and international business research, encouraging a future in which SMEs use AI to achieve international success and sustainable growth.

Keywords: artificial intelligence; international strategic decision; international market selection; small and medium size enterprises; internationalization.

Framing of the research. *In recent years, the multifaceted digital transformation process has become fundamental to the management debate (Zoppelletto et al., 2023). This phenomenon results from integrating modern technologies that enhance data gathering, archiving, and analysis. Such technologies encompass numerous innovations and state-of-the-art instruments, including robotic automation, additive manufacturing, artificial intelligence (AI), and the Internet of Things (IoT) (Strange et al., 2022). Among them, AI has emerged as a critical facilitator, providing essential opportunities for innovation and growth across a variety of industries by assisting in overcoming computational, logical, and even creative limits that have long limited human activities (Dwivedi et al., 2021; Kumar et al., 2022). The distinctive feature distinguishing AI from other technologies is its capacity to learn, build connections, and adapt, which enables AI systems to continuously enhance and evolve, leveraging the data and experiences they encounter (Brock & Von Wangenheim, 2019).*

A contemporary definition by the OECD (2022, p. 4) characterizes AI as “a machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations, or decisions influencing real or virtual environments with varying levels of autonomy”. The term “AI adoption”, that refers to its acceptance and utilization by society but also to its integration within an organization (Radhakrishnan & Chattopadhyay 2020), leading global companies, like Google and Microsoft, are progressively enhancing their products with AI facilitating widespread access to numerous technologies (Konnerth, 2023). Technologies made possible by AI can be employed to improve operations, products and services, and other aspects of the business, such as corporate performance. AI enables continuous operational refinement through data analysis and insight generation, providing organizations with benefits such as improved decision-making, increased productivity, and competitive advantage (Magistretti et al., 2019; Cheng et al., 2021; Denicolai et al., 2021). Through work automation, data-driven insights, and robust predictive analytics, AI integration helps organizations navigate complex global situations (Bag et al., 2021; Satheesh et al., 2020; Allal-Chérif et al., 2021; 2020; Wamba-Taguimdje et al., 2020).

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In the context of international business (IB), AI is one of the major factors driving its evolution. It could be vital in solving intricate problems in this field, enabling businesses to employ adaptive algorithms for tasks previously requiring human intelligence (Ahn et al., 2022). According to Li et al. (2021), Shi (2022), and Zhu (2021), AI enables to anticipate market demands, reduce risks, optimize supply chain management, simplify logistics, and improve cross-border transactions, especially after the launch and public availability of Chat-GPT from Open AI as well as other comparable apps like Google's Bard and Microsoft's Bing. Regarding e-commerce, AI optimizes operations, improving efficiency, and delivers timely and accurate assistance to users by automating responses and interactions through Chatbot applications (Cheng et al., 2021). Due to its accessibility, AI has become more widely accepted and has generated interest in how it will affect the workplace and commercial environment (Menzies et al., 2024), also considering that its influence depends on the type used (Konnerth, 2023).

For these reasons, interdisciplinary research at the nexus of AI and IB is becoming more widespread (Jarrahi, 2018). In this stream of research, according to the OECD Trade Policy Paper (2022), AI has demonstrated the ability to change several facets of global trade and business models, including improved market selection and manufacturing location decision-making (Feliciano-Cestero et al., 2023). Although previous research has focused on the internationalization process of firms, research in the context of AI is comparatively limited (Ratten, Jones & Braga, 2024). Indeed, the study by Jones (2023) emphasizes a need for a comprehensive understanding of the application of AI and related technologies in effectively addressing IB challenges, including its sub-functional areas. Furthermore, the study underlines the necessity of elucidating the connections between AI-enhanced IB functions and other operational activities to optimize organizational outcomes.

For multinational companies (MNEs), adopting AI is becoming fundamental for enhancing productivity, competitiveness, and decision-making capabilities (Bag et al., 2021), especially in the international context. AI can improve MNEs' recognition of foreign opportunities and give them more access to international markets (Dillon et al., 2020). However, while MNEs may face fewer obstacles in handling digital transformation, AI presents fresh prospects for small and medium-sized enterprises (SMEs) by improving their competitiveness (Baabdullah et al., 2021). The benefits of AI implementation encompass the development of new business models and the enhancement of customer and entrepreneur experiences. Furthermore, AI could help SMEs to increase their profitability by advancing advertising, customer service, content writing, conversion optimization, predictive analysis, decision-making, wealth management, and fraud prevention (Enshassi et al., 2024). AI's ability to adapt and remain relevant over time enables SMEs to avoid the risk of becoming reliant on technology that may become outdated and expensive to replace, while also providing business solutions that are more sustainable and cost-effective (Castillo & Taherdoost, 2023).

The European Economic and Social Committee's 2021 study underscores the importance of increasing AI adoption among Europe's SMEs to reinforce their innovation capacities and facilitate their expansion into international markets. This strategic approach enables SMEs to compete effectively on a larger scale. In this respect, AI can help entrepreneurs with important international strategic decisions (ISDs), such as international market selection (IMS). There is a notable interest in this perspective, indicating the need for further research and the development of AI-powered models for market analysis, precise forecasting of foreign market trends, and formulating entry strategies (Menzies et al., 2024).

Notably, IMS is an essential and complex decision-making process where firms choose which markets to target and be present in (Francioni et al., 2015). The literature on international business, marketing, and management has long acknowledged the importance of this strategic decision (e.g., He et al., 2016). Indeed, the variety and diversity of international markets, and the difficulties businesses encounter when locating, assessing, choosing, and seizing opportunities overseas, highlight the strategic significance of IMS. The performance impact (Brouthers et al., 2009; Martín Martín et al., 2022) contributes to the consensus that well-informed IMS decisions result in favorable outcomes. Furthermore, according to Papadopoulos and Martín Martín (2011), there are expenses related to joining the incorrect markets as well as lost chances from not choosing better options. Other significant ISDs related to IMS include choosing an entry mode (Francioni et al., 2015) and, if required, choosing appropriate foreign partners, such as prospective clients, agents, and distributors. Consequently, the global success of SMEs may be significantly impacted by using AI in key ISDs (Denicolai et al., 2021; Kumar et al., 2022). In the footsteps of Fish (2006), who tackled the issue of IMS using AI computing and Kohonon Self-Organizing Maps, an example may be the successful application of Large Language Models, like Chat GPT, to identify an appropriate foreign market for a recently developed product. Like this, AI can help find possible cross-national segments' clusters. This is particularly useful for SMEs, which frequently lack thorough internationalization plans and methodical methods for market selection (Vissak & Francioni, 2013; Musso & Francioni, 2014), as they can use AI to speed up their expansion.

Despite the potential benefits, many SMEs have hesitated to embrace AI technologies due to challenges arising from their size, including limited financial resources and technical expertise (Silva & Gonçalves, 2022). There are numerous obstacles to applying AI in SMEs, including a lack of qualified employees, high expenses, a lack of expertise in the field, a lack of rules, technological issues, etc. Indeed, for a successful AI adoption, barriers related to trust, security, price, management support, and technical competencies need to be overcome (Enshassi et al., 2024).

SMEs frequently underestimate the importance of digital solutions, mainly because entrepreneurs are unaware of their possible advantages (McCann & Barlow, 2015). Therefore, more evidence is needed for SMEs to apply these technologies (Prem, 2019).

Purpose of the paper. Since research on the intersection of AI and IB is still in its early stages and requires a theoretical framework, it is a promising opportunity to explore this field, generating insights and encouraging discussion (Ratten, Jones & Braga, 2024). Therefore, given the overview of previous research, the purpose of this paper is to shed

light on the transformative potential of AI in the global economic landscape and to offer insightful information on how firms, especially SMEs, which are the backbone of the European economy⁵, can take advantage of this technological revolution.

For this reason, this contribution aims to answer the following research question: How do entrepreneurs adopt AI digital technologies in International Strategic Decisions?

Having explored how entrepreneurs in this stream adopt AI technologies in making ISDs, the research question of the present work will be addressed by conducting extensive qualitative research. In particular, based on the suggestion of Ratten, Jones, and Braga (2024), conducting interviews in international businesses will allow us to comprehend their perceptions and thoughts on AI adoption processes. This will be beneficial in proactively shaping future practices and enhancing SMEs' understanding of integrating AI into their ISDs.

Methodology. The study follows a qualitative approach to answer the research question about adopting digital AIs for international strategic choices. In particular, we employed a case study approach, which is highly relevant in international research (Eisenhardt, 1989; Ghauri, 2004; Yin, 2009). In the case of the current study, this methodological framework allows for exploring participants' perceptions regarding the processes of adopting AI in the context of ISD.

Consistent with previous studies (Rashid et al., 2019; Yin, 2009), we carried out the following steps: planning, design, preparation, data collection, analysis, and development of findings. In detail, after outlining the research objectives and questions, a research approach and data collection method have been defined. The interview protocol for the research was divided into three parts: first, a brief introduction aimed at gathering information on the company's profile, including its founding date, location, years of international involvement, and presence in foreign markets. The next set of questions focused on the adaptation of AI within the company to determine the current status of its implementation and managers' perceptions of it. A discussion of AI's potential value and use in various aspects of the international decision-making process, such as market selection, entry modes, partner selection, customer engagement, market performance analysis, logistics optimization, and risk management, followed this. Similar inquiries have been directed to the international sales back office.

Data on Italian manufacturing SMEs that have performed international activities have been collected for research purposes. The decision to target this specific group is due to the dominance of SMEs in the Italian economy, which are particularly well known for their proactive adoption of digital innovations (Matarazzo et al., 2021; Miroshnychenko et al., 2021). Data collection is in progress and, at the moment, primary data were collected through interviews with both the CEO and the export manager of IRON⁶. These interviews, which lasted between 30 and 45 minutes each, were recorded with the consent of the participants. Specifically, the business under analysis is an SME that specializes in contract metalworking operating in the Marche region's hinterland. The CEO, who over the years has taken on more and more responsibility for strategic business growth decisions, particularly those involving internationalization, was interviewed to achieve the goal of this research. Generally speaking, exports account for 20% of the company's turnover.

As the case study approach highlights the importance of integrating multiple sources of evidence, additional available materials, such as company reports and online resources, have been added. The secondary data was collected prior to the interviews to facilitate the data triangulation (Eisenhardt, 1989). In line with previous research (Pagani & Pardo, 2017), we considered reliability by elaborating a detailed case study protocol and performing member checks. This step ensures a higher degree of accuracy with less subjectivity in the interpretation of the findings and integrating the researchers' suggestions into the theoretical evidence (Ranfagni et al., 2021).

In the data analysis stage, we followed a ground-up approach based on extracting the theoretical themes from the obtained data from analyzed cases (Ghauri, 2004; Yin, 2009).

Results.

AI adoption - During the interview, the authors asked whether the company was already using AI directly or with the help of consultants. The CEO gave the following answer:

'At the moment, we are not yet using any kind of artificial intelligence tools directly. I am beginning to inform myself and to study what the tools might be and how I might incorporate them to take advantage of them. So, as a CEO, I am considering doing that in the future. I am working with an external consultant who deals with innovation and digitization, and with him, we are participating in calls to win funding related to the development of advanced digitization platforms but with a view to improving some processes that are more critical and problematic for us such as logistics (both internal and external). However, I am also thinking of involving others to implement AI-based solutions in internal strategic departments.'

Therefore, it appears that the company sees it as a potential future opportunity and that the current lack of usage is mainly attributed to the lack of information, as stated by the CEO:

'We have not used them yet because we do not have an in-depth knowledge of what these tools are and how they can be used, and therefore major investments would be needed both to have the same solutions and for the training that would have to follow.'

⁵ [https://single-market-economy.ec.europa.eu/smes_en#:~:text=Small%20and%20medium%2D-sized%20enterprises%20\(SMEs\)%20are%20the%20backbone, every%20sector%20of%20the%20economy](https://single-market-economy.ec.europa.eu/smes_en#:~:text=Small%20and%20medium%2D-sized%20enterprises%20(SMEs)%20are%20the%20backbone, every%20sector%20of%20the%20economy) [22/02/2024]

⁶ The name of the company has been anonymized to ensure confidentiality.

While asking about confidence in the effectiveness of AI, despite showing interest and mentioning some research on the topic, trust emerged as a crucial missing element to proceed further in AI adoption within the company. The CEO said:

'I am reading many articles and success stories related to the engineering industry that use artificial intelligence. However, I must say that I still do not totally trust them. I would also like to hear and evaluate how my competitors work and how they adopt them especially if they are really effective to get totally to trust and seriously think about adopting them in the company.'

However, this was different from the perspective of the Foreign Sales Back Office, who shared that not only is not thinking of adopting AI but also was never really interested in it.

Internationalization and AI - As the company has been internationally involved for more than eight years and operates in five different countries, the focus was on understanding how ISDs are currently made. The CEO explained that the company relies on word of mouth to acquire new customers, depending on foreign customers to refer the company's name to other partners. Even though AI is not currently utilized within the company, there is an expressed interest and potential for its adoption in the future. Referring to AI applications, the CEO said:

'We would be interested in implementing them because I realize there is potential. They could improve our ability to analyze international markets, which at the moment as mentioned is virtually absent, and make informed decisions based on data instead of relying solely on word of mouth from our customers.'

Regarding the benefits of integrating AI into ISDs, it was recognized by the CEO that:

'[...] there is potential to understand foreign markets better. I'm convinced that decisions should only be made if you have enough data and, in this case, since artificial intelligence relies precisely on large databases could help us make certainly more informed decisions at the very least. So maybe the risks associated with poor choices may decrease. [...] I think one of the great advantages of AI is the fact that we have available and continuously process a database that is beyond our capabilities (in terms of human capabilities) so certainly the analysis of foreign markets could be much more optimized. Then clearly the human capacity to be able to evaluate alternatives and make the most sensible decisions based on the information also takes over. Internationalization strategies in general would then be much more reasoned and objective.'

This positive perception toward AI used for ISDs, was also shared by the Foreign Sales Back Office, who said that being able to 'have forecasts of customer demand trends, would be much easier to coordinate production and logistics' improving the company's international business.

Finally, despite the CEO's interest and acknowledgment of the potential benefits associated with AI adoption, there is a clear and pressing need for a comprehensive understanding of AI applications and their integration within the company (e.g. *'[...] However, I would first like to be certain by studying more that these are the right tools for our needs.'*). Both the Foreign Sales Back Office and the company's CEO expressed a lack of knowledge about AI and admitted to being unfamiliar with its tools.

Based on these initial interviews, it is evident that this paper holds relevance and will prove valuable for SMEs seeking insights into adopting AI digital technologies. The topic remains somewhat obscure and needs further exploration. Through future interviews showcasing how some entrepreneurs are already incorporating AI into their ISDs, this paper will make a meaningful contribution.

Based on the comprehensive insights provided in the paper, it is evident that the adoption of AI holds transformative potential for SMEs, particularly in the context of ISDs. The first qualitative interviews reveal both the current state of AI adoption and the perceived opportunities and challenges it presents. While AI is recognized for its significant potential to enhance decision-making, productivity, and competitive advantage, its integration within SMEs still needs to be discovered. The primary barrier to adoption seems to be a lack of understanding and trust in AI technologies, alongside the high initial investment required for implementation and training.

The enthusiasm for AI's capabilities in improving international market analysis, entry strategy formulation, and overall strategic decision-making is tempered by concerns over the readiness of SMEs to embrace such technologies. The interviews highlight a desire to leverage AI to gain insights into foreign markets, optimize logistics, and reduce risks associated with poor strategic choices. However, more knowledge and trust should be gained regarding AI's effectiveness and application.

This discussion emphasizes the need to bridge the knowledge gap and increase SMEs' trust in AI technologies. Additionally, the study highlights how AI may help SMEs compete on an even playing field with larger rivals by providing affordable, flexible, and long-lasting business solutions. As such, it becomes crucial for policymakers, educational institutions, and industry leaders to collaborate in facilitating SMEs' transition into the digital era, thereby ensuring their competitive stance in the global marketplace. This paper contributes significantly to the ongoing discourse on AI and international business, emphasizing the urgent need for comprehensive understanding, strategic implementation, and supportive frameworks to harness AI's full potential in enhancing the global competitiveness of SMEs.

Research limitations. While this study provides new insights about AI integration into ISD processes, it is important to acknowledge several limitations. First, sampling limits the representativeness of the findings to this specific market, thereby limiting their generalizability. Second, the dynamics within the industry may be partially represented by the focus on manufacturing SMEs. Therefore, future research could explore the impact of AI integration across different sectors and geographical locations. In addition, the implications of AI integration can differ depending on the context and organizational settings. Thus, future research could examine how contextual factors such as sector-specific regulations, market dynamics, and technological infrastructures affect AI's integration. Lastly, while our study briefly touched on

managers' perceptions of AI, a deeper exploration of managers' attitudes, behaviors, and decision-making strategies towards AI adoption is needed. Future research could focus on the managerial competencies and skills required for the effective use of AI technologies in international decision-making processes, as well as the organizational factors that influence managers' attitudes toward integrating AI.

Managerial implications. The managerial implications that emerge from our findings can serve as a signal to internationally operated SMEs about the value of AI technologies. By understanding the process of AI adoption and its impact on international strategic decisions, firms can align international strategies and optimize operations, respectively. In addition, the findings may have implications for policymakers regarding support for SMEs in integrating AI technologies.

Originality of the paper. This study stands out for its focus on AI adoption in international strategy-making decisions, a relatively underexplored topic in the existing literature. Through a case study approach focusing on SMEs operating internationally, the study sheds light on the opportunities, challenges, and implications of AI integration. Emerging findings reveal the role of AI use from different perspectives within ISD processes, such as market selection, entry mode, partner selection, customer engagement, market performance, logistics, and risk management, providing insights that can inform future practices and strategies in these areas.

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Track 4
Management Case Studies

A Public Service Logic perspective applied to health and social welfare services provided to the elderly: the case of the VIII Municipality of Rome

MAGDA TOUTI¹ FABIOLA SFODERA² LUCA DEZI³

Abstract

With the increase of the elderly population, it is necessary to ensure effective and efficient delivery of health and welfare services to this group of people and to be able to meet their requirements. In this scenario, Public Administration plays a key role in providing support and helping to reduce the burden on the hospitals. By adopting a Public Service Logic perspective on a single case study, the aim of this research is to understand how the integration of resources occurs and to identify the key areas of value creation and where improvements are needed. In the preliminary results, an initial mapping of processes is presented, which provides an understanding of what services are provided, how they are accessed, how they are delivered and who are the key players in this process. This work has significant implications, both theoretical and managerial.

Key words: *Public Administration; Public Service Logic; Elderly population; service management; Public Service Ecosystem*

Framing of the research. *Elderly population, in accordance with the definitions of the World Health Organization (WHO), indicates individuals aged 65 years or older.*

Italy's population has a median age of 48.4 years, the oldest in Europe in 2023. Italy ranks second in the world, after Japan, in terms of elderly population (OECD, 2023)

According to the 2023 Annual Report of the National Statistics Institute (Istat), which provides an overview of the demographic, economic and social situation in Italy, the resident population of Italy on 1 January 2023 will be 58.851 million. The population over 65 years of age amounts to 14.177 million individuals and constitutes 24.1 per cent of the total population. The old age index, which measures the number of people aged 65 and over for every 100 young people aged 0-14, has increased from 187.6% in 2021 to 193.1% in 2022, in line with the general population trend.

The population over sixty-five is expected to reach 34.5% of the Italian population in 2050 (ISTAT). With an ageing population and longer life expectancy, the proportion of dependent elderly people is set to increase (Cochrane et al., 2016), requiring more and more health and social welfare services. In fact, the lengthening of life expectancy poses several challenges for the nation, requiring the active participation of all entities to ensure effective delivery of the required services. According to Brunzini et al. (2022), ageing leads to increased costs for both the Italian National Health System (NHS) and the private citizen. For the National Health System, the difficulties mainly concern direct costs for medical care, rehabilitation treatment and hospitalisation, while the citizen is burdened by the costs of prolonged care by caregivers and, in some cases, placement in care facilities (Brunzini et al., 2022). Although the allocation of healthcare resources varies considerably between different Western countries, according to Petrelli et al. (2010), overall, healthcare resources are allocated based on the population's actual need, which is closely linked to their health. In Italy, since the 1990s, the National Health Service has been reformed with the aim of providing equal health care for all, financed through general taxation. Over the years, to facilitate its management, more responsibility was attributed to regional health authorities (Petrelli et al., 2010). As a result, multiple governance models have emerged, with differences in the composition of public and private providers, the number and size of local health units and the autonomy of public hospitals. Since 2000, the regions have also been coordinating, planning, and monitoring social services and, to avoid significant differences in the services provided, the 2001 constitutional reform defined the basic principles and services to be provided in all regions, including health and social welfare services (Cepparulo & Giuriato, 2022). Among the interventions implemented, the "health" ministerial decree of 2007 introduced the Single Point of Access in Italy. The

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Single Point of Access is a structure designed to simplify access to the system for citizens through the integration of health and social welfare activities in a broad sense. It is responsible for the reception of requests for assistance, followed by an initial assessment of the need to propose to the citizen appropriate services with respect to his or her needs and the activation of the relevant services (Notarnicola et al., 2015). Nevertheless, although these systems were created with the intention of providing public services with universal coverage, increasing financial constraints and social pressures are leading to a change in the delivery of these services. Indeed, to date, private and non-profit organisations, together with families, are increasingly involved in the planning and delivery of social care services (Longo et al., 2015). To address these challenges, it is necessary to provide sufficient health and welfare services, promote a healthy lifestyle and create a social and physical environment that encourages active ageing. Within this context, public administration (PA) plays a key role in ensuring the provision of effective, efficient, and quality services. This study focuses on the health and social welfare services provided to the elderly by the Municipality VIII of Rome where by health and welfare services we refer to: “the professions that support health personnel in the administration of therapies and in the surveillance and protection of hygiene and public health safety; they carry out physical and manual assistance by performing, within the scope of their competences, prevention, treatment, rehabilitation and functional recovery; they carry out assistance interventions aimed at satisfying the primary needs of patients; they take care of the psychological, motor, recreational and health development of children” (ISTAT). The aim of this study is to identify the actors involved and the key areas of value creation and understand how the integration of resources occurs adopting a Public Service Logic (PSL) perspective (Osborne, 2013).

In the management literature, scholars have highlighted the potential of Service Dominant Logic (SD-L) in promoting the development of more effective services in the public sector (Westrup, 2018) and have proposed a new stream of research called PSDL (Public Service Dominant Logic) or PSL (Public Service Logic) (Ojasalo & Kauppinen, 2024). Over the years, SD-L (Vargo and Lusch 2004, 2008) has been widely applied in the disciplines of management and marketing as a theoretical basis for understanding market phenomena, sectors (Vargo & Lush, 2017) and services (Maglio and Spohrer, 2008). According to this perspective, value is uniquely determined by the customer or user (Vargo & Lusch, 2004) and the role of the company is to offer value propositions. In this reciprocal relationship, producers use their knowledge and skills in production, while customers apply them in the use of the product or service, the “value in use”, and in its evaluation based on context as well as previous experience, the “value in context” (Osborne, 2018). According to this perspective, public services should be evaluated by their ability to facilitate the creation of value in the lives of public service users and other stakeholders (Osborne et al., 2021). This approach incorporates the principles of Service Dominant Logic and is built on four premises (Osborne et al., 2013):

1. Both citizen and user are essential stakeholders in public policy and public service delivery processes, and their engagement in these processes adds value to both.
2. A public service-dominated marketing approach is essential for: transforming the strategic intent of a public service into a service promise or offering; defining the expectations of service users and employees; and providing a solid framework for developing trust in public service delivery.
3. Co-production of the service is an important element of public service delivery and design, placing the experiences and knowledge of the service user at the centre of effective public service design and delivery.
4. A dominant approach to public service management and operations is necessary to ensure efficient and effective public services and to deliver on promises.

Recently, Ojasalo & Kauppinen (2024) proposed different levels of the public service ecosystem. In their framework, the emphasis and interpretation of public value is defined by elected representatives, who belong to or are authorised by the local and regional, national, and international levels (Ojasalo & Kauppinen, 2024):

1. **Citizen level:** The term, citizen level, refers to individual citizens of a public service ecosystem, who are consumers and users of public services. The difference is that while consumers use public services by paying for them directly or through taxes or other means of public financing, users, who may or may not pay for the use of services, are those who actively benefit from them. Public value is the ratio of benefits to sacrifices, which is perceived and defined individually by the citizen. The emphasis is on the individual value of the users of the service provided by the public organisation.
2. **Organisational level:** the integration of resources within an organisation that produces a public service. It can also include digital platform service providers and communities.
3. **Local and regional level:** the integration of resources and their orchestration at the regional level. It is often realised or strongly influenced by the local regional government and its collaborative arrangements. Actors in orchestration typically include, but are not necessarily limited to, organisations or individuals responsible for policy and governance in cities, municipalities, and regions.
4. **National level:** the integration of resources and their orchestration at the national level. It is often made or strongly influenced by the national government.
5. **International level:** the integration of resources and their orchestration that occur in collaboration between nations.

In public service ecosystems, a comprehensive view is undertaken encompassing all individuals, technologies and institutions involved in the creation and delivery of value generated through the public system and adjacent private stakeholders' (Petrescu, 2019).

Purpose of the paper. By identifying and analysing the services provided to the elderly, the objective of this study is to identify the actors involved and the key areas of value creation and understand how the integration of resources occurs through the lens of Public Service Logic perspective. To achieve this objective, we define the following research questions:

RQ1: What are the areas of value creation in local services provided to the elderly in the Public Service Logic perspective?

RQ2: Who are the actors involved and how do they integrate with each other?

The study is developed in two phases. The first is mapping the services offered by the Third Age Area of Municipality VIII of Rome. The second phase consists of interviews with the ecosystem actors involved to understand their functions, roles, tasks, and modes of interaction in the production and service delivery process.

Methodology. To achieve the research objective, this study employs a single case study approach (Hunziker & Blankenagel, 2024). Case studies can be defined as research investigations that examine contemporary phenomena within their real-life context and support researchers in addressing “questions about the how or why of a set of events over which the researcher has little or no control” (Yin, 1994). Accordingly, the case study allows for a holistic representation of the unit of analysis in its environmental context containing all relevant aspects, elements, and relationships. It is a valid research design as it enables researchers to understand developments, processes and cause-and-effect relationships in a particular business and social context, while allowing them to approach real-life situations and directly test perspectives and viewpoints on the phenomena under observation (Hunziker & Blankenagel, 2024). The protocol for data collection and analysis is organized into the following sequential steps.

a) Case selection

The registered population of Rome as of 31 December 2022 is 2,813,544. The phenomenon of population ageing continues to increase Rome's average age, and, over the last decade, it has increased by 2 years, from 44.6 years in 2013 to 46.6 years in 2022. Rome is distributed into fifteen municipalities, each with its own characteristics in terms of territorial extension and population. The most populous municipality is the municipality VII, with 311,500 inhabitants, while the least populous is the municipality VIII with 128,417 inhabitants. The latter will be examined in this study as it is interesting to note that, although it is the least populous municipality, it is also one of the “oldest” (along with municipalities I, II and XV). According to the data provided by the official website of the city of Rome, the municipality VIII has an old age index of 233.8. In other words, for every 100 individuals aged between 0 and 14, there are approximately 233.8 people aged 65 and over. The importance of effective and efficient management of services for the elderly in such a context is evident.

Figure 1: Map of the municipalities in Rome



Source: Official City of Rome website

b) Data collection

In accordance with Yin's (2004) prescriptions, data on the case were collected from various sources, both online and offline:

1. Secondary sources: mapping by relevant data and information on the phenomenon under investigation. These sources included the City of Rome website, academic articles, industry reports, including national, regional and municipal laws, internal memos and regulations.
2. Interviews with the responsible personnel: semi-structured interviews with staff's manager and managers of the Third Age Area⁴ of Municipality VIII were conducted to obtain an in-depth understanding of the organisational structure implemented for the delivery of health and social care services to the elderly.

⁴ The Third Age Area is the department within the Municipality VIII in charge of managing services for the elderly. The office is responsible for the provision of home services and financial support and is responsible both for the activation and monitoring of services.

c) **Data analysis**

To construct the case study, the researchers first conducted process mapping. At this stage, the aim is to define Municipality VIII's organizational structure by identifying which services are provided in the flow of activities and decisions within a workflow related to delivering public services per the principles of the Public Service Logic (Bowles & Gardiner, 2018). Process mapping is valuable for visualizing and improving service processes (McLaughlin et al., 2014).

Results. The research is still in progress therefore the first results are described below. Semi-structured interviews with the staff in charge of the Third Age area and the analysis of secondary sources revealed that the health and social welfare assistance in Rome's Municipality VIII offers five typologies of services, of which a brief description is given below with the aim of understanding the process through which the elderly person, or a member of his or her family, becomes acquainted with the services of the municipality until the moment the service is provided.

Protected discharge service

The protected discharge service is an integrated social home care service activated by the hospital to provide home care for the elderly after hospital discharge. The service is activated immediately after discharge from hospital and lasts 60 days. The team providing this service consists of health workers, for medical and nursing care, and an operator from one of the cooperatives accredited by the municipality who provides support for daily activities (e.g. personal care, hygiene, dressing, small errands, going to the doctor, preparing meals, etc.). A maximum of 7, 30 hours per week can be provided, which are distributed according to the person's needs.

S.A.I.S.A.

S.A.I.S.A is a service that lasts forever from the moment it is activated. This service, similar to the previous one, that focuses on maintaining and recovering the elderly person's autonomy and self-sufficiency. The access requirements are:

- women over the age of 60 and men over the age of 65.
- be in possession of Civil Disability,
- have a severe disability, Law 104/1992⁵, Article 3 paragraph 3.

Specifically, it is a service that provides support for personal care, both at home and elsewhere, help in carrying out activities of daily living, socialisation activities, development and support of personal and social autonomy.

Severe disability

This service is an aid for the elderly and for people with disabilities. It is aimed at the entire disability sector from 0 to 1,000. the contribution is designed for elderly persons who are in one of the conditions expressly provided by the ministerial decree. The requirements are:

1. To be recognised under Law 104/1992, art. 3.
2. Benefit from an attendance allowance.

The service is available under three forms:

- Direct: direct home care through cooperatives
- Indirect: family assistance refund
- Caregiver support

The allowance for direct assistance and caregiver support ranges from a minimum of EUR 400 to a maximum of EUR 700, while indirect assistance ranges from a minimum of EUR 500 to a maximum of EUR 800. The variability depends on the ISEE (Equivalent Economic Situation Indicator) and on whether the user uses other services (e.g. home care).

Alzheimer's day care centre

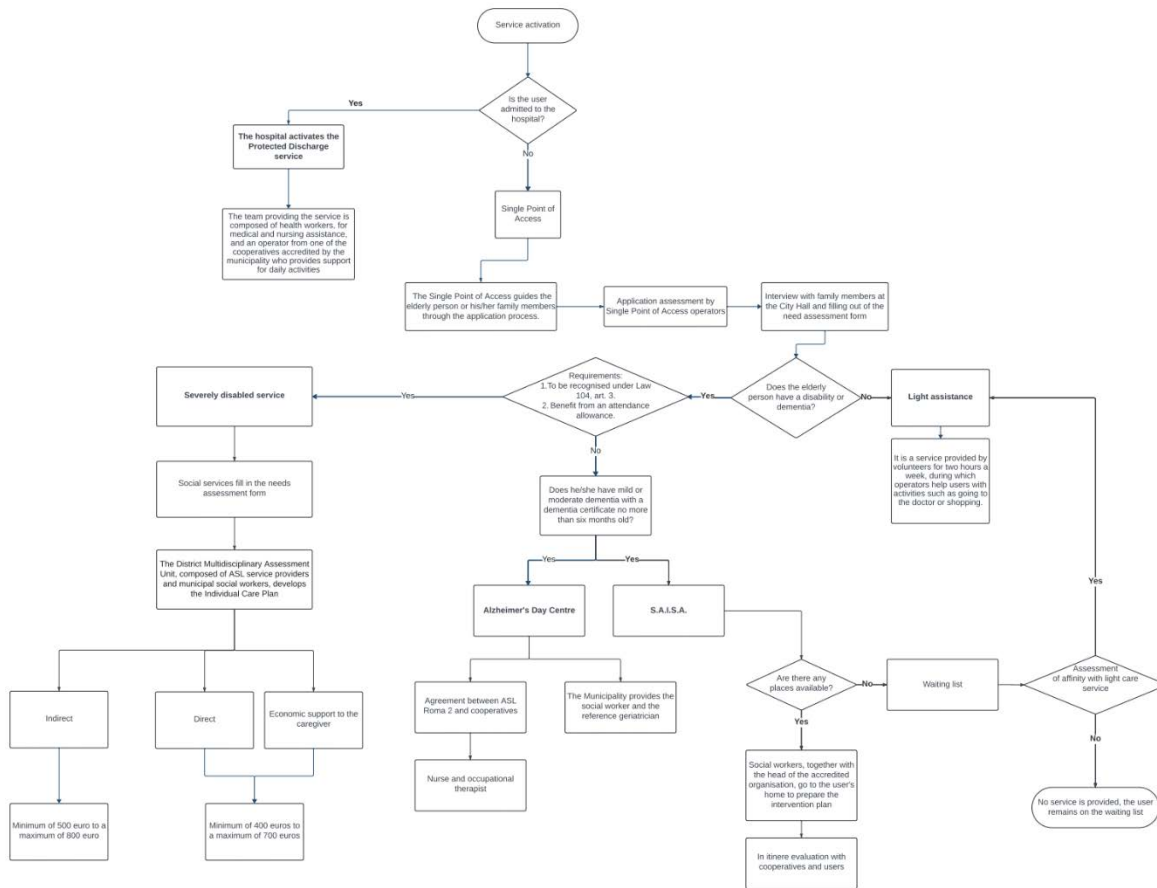
The Alzheimer's Day Centre is a centre for people with Alzheimer's and other mild or moderate dementias. To qualify for admission to the centre, the person must have a dementia certificate that is no more than six months old. The centre accommodates nineteen users from the municipality and is attended 2 or 3 times a week, from morning to afternoon, for 8 hours a day. A transport and meal service are provided for those who request it. Various professional figures are involved: psychologists, professional educators, physiotherapists, occupational therapists, nurses, OS. The centre is attended for as long as the person is able to benefit from the proposed activities, mainly those aimed at delaying the progression of the disease and exercising memory. Various workshops are also carried out (handicrafts, music, etc.), geared towards exercising the person's cognitive functions and his or her orientation in time and space (e.g. carrying out themed activities during Christmas or organising the centre's spaces in a specific way).

Light assistance

This is a service provided by volunteers for two hours a week, during which operators help users with activities such as going to the doctor or shopping. This service is useful because it enables to monitor the health conditions of that segment of the elderly with greater autonomy and self-sufficiency.

⁵ Law 104/1992 is the reference law enacted by the Italian Parliament for individuals with “a physical, psychic or sensory impairment, stabilised or progressive, which causes learning, relational or integration difficulties”.

Figure 2: Process map of health and social welfare services provided by the VIII municipality of Rome



Each of the services offered has different access requirements and forms of provision. For each service, the process starts from the Single Point of Access. Specifically, Single Point of Access guides the elderly person or its family members to submit the application. Subsequently, the application is assessed by the operators, and an interview with the family members is held at the city hall. Once the documentation regarding the application and requirements is received, a home visit is conducted. During this visit, a “needs assessment form” is used to provide an overview of the elderly person's situation in terms of level of autonomy and self-sufficiency (e.g. if they are able to dress themselves), family situation (e.g. if they live alone or not), financial situation and architectural barriers. An evaluation form is completed and used to decide whether and what type of service to activate and how many hours of assistance are needed. Finally, a project is drawn up, the 'intervention plan', containing the objectives, interventions, times, days and costs.

The results are expected to emphasise the significant role of the Single Point of Access (PUA) as a crucial distribution hub for the various service areas. From the process map it emerges that there is no upstream control, but several ongoing controls whose modalities are not clear. Indeed, the services are also provided by third parties - cooperative operators and volunteers selected by them - without there being rigorous controls to ensure quality. This is a relevant aspect as the volunteer is in close contact with the elderly person, i.e. the most important area of value creation. However, the function is delegated to a volunteer selected by a provider, meaning that there is a significant economic investment on a service that is delegated to the ethics of the provider who is free to select volunteers without strict constraints. In terms of theoretical implications, the findings are expected to emphasise the need to adopt an ecosystem approach within public services that considers different levels of analysis (citizen level, organisational level, local and regional level, national level, international level) by developing the concept of service ecosystems in the Public Service Logic Theory. Furthermore, the article addresses the call for more studies on value co-creation in service ecosystems and the role of public service providers as value facilitators (Osborne 2018).

Moreover, the services can be distinguished into (van der brug et al., 2019): on-demand services, in which customers have access to a service immediately when experiencing a need anywhere and anytime, and on-request services, in which it is not certain that the service requested will be immediately available. Therefore, in this case, the flow is activated when there is a request, but the service can also be delivered at a later time. In this study, the services provided by the municipality VIII of Rome are on-request. From a management point of view, the on-demand modality allows for greater programmability of services as it does not require immediate access to the service to anyone who requests it. However, the presence of approximately 250 people on the waiting list indicates a high degree of inefficiency in public service delivery.

Research limitations. *The main limitations of this study are related to the difficulty of gathering information in a context that requires access to data from different sources, i.e. local authorities and cooperatives working with them, health institutions and social welfare organisations. The Italian Health Service perspective can influence the number and type of actors in the ecosystem based on normative provisions. Furthermore, the complexity of the ecosystem and the multiplicity of actors involved make it difficult to accurately design all the stages without having interacted with all the actors, leading to additional details that may be relevant not being considered in the process. A further limitation concerns the use of the case study and the generalisability of its results to other contexts, especially those in which the public service delivery system is very different from the Italian context.*

Managerial implications. *The study has important implications for both public management theory, public policy, and the management and delivery of public services. The actors affected are numerous and include policy makers, health professionals, managers, and public and private organisations (both local and national) involved in the management and delivery of services for older people.*

Originality of the paper. *The originality of the study lies in the adoption of the Public Service Logic and its integration with process mapping to identify areas of value creation in the public service delivery process and improve its efficiency and effectiveness to meet the growing challenge of an ageing population.*

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Interpreting long-lasting corporate crises according to stakeholders' perspective: evidence from the ILVA experience

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Abstract

The aim of the short paper is to provide a holistic overview of corporate crises by investigating how different stakeholders and interests are impacted by a corporate crisis over time. To offer a multi-stakeholder and longitudinal analysis of corporate crises, an exploratory approach based on extreme case study is adopted. The research examines the case of an Italian company whose crisis extended over a long period and presented multiple dilemmas to decision-makers: the ILVA. Using a content analysis, we examine how corporate communication, newspapers, and press releases have approached the ILVA crisis over time. The results show how strategic priorities have been established and renegotiated over time, as new issues have emerged, demonstrating the difficult to achieve a balance among different stakes, especially in the face of economic pressures and regulatory challenges, and that environmental and health issues should be considered together with the economic conditions.

Keywords crisis management, stakeholder, sustainability, case study

Framing of the research. Crises are complex events stemming from long-term disruptive processes that challenge corporate legitimacy and threaten firm performance, involving several different stakeholders (O'Reilly et al., 2015; Williams et al., 2017; Li et al., 2023). These disruptive and often unexpected events tend to challenge companies' legitimacy, creating uncertainty and a certain incongruence between the desired corporate image and the image that stakeholders perceive (Seeger et al., 2003; Sellnow and Ulmer, 2003). Drawing upon the extant literature, corporate crises have been defined as a pathological situation in a company's life that endangers its survival (Sciarelli, 2011), or as "the extreme consequence of the increasing decline of corporate profitability" (Abatecola, 2012, p.862). However, it is worth noting that most of the research focuses on either the causes of the crisis or the most effective coping strategies, primarily from an economic or financial point of view. Moreover, research primarily focuses on the definition and the analysis of corporate crisis antecedents, highlighting that anticipating a corporate crisis is not an easy target to hit, due to multiple and often intertwined macro-environmental, industrial, and/or firm-specific factors (Ou and Wong, 2021). Several variables (e.g., the nature of the antecedent or triggering event, the involved stakeholders, etc.) contribute to defining the way scholars and practitioners approach these crises (Heller and Darling, 2011), even though they tend to consider information asymmetries between a firm and its stakeholders one of the most common threads in existing studies on the topic (OuYang et al., 2017).

Coombs (1999) defines crisis management as "a process of moving from the unknown to the known through information gathering and processing" (p.127). This definition highlights the information- and knowledge-intensive nature of crisis management; thus, to enact efficient and effective processes, it needs the right information to inform corrective actions (Coombs, 2010). Information is essential for supporting managers in making sense of a crisis, focusing on its causes and possible solutions. Moreover, to manage critical situations, efficiency (which comes from the ability to maximize the relation between operating and liquidation value, avoiding unnecessary value destruction and minimizing the related costs) and equity (which emerges when the different interests and priorities are respected) are essential to make a company able to navigate the crisis and survive (Franceschi and Tedeschi, 2014). It follows that one of the main challenges of the extant research is understanding how to approach and fix corporate crises, mainly through crisis management mechanisms, essential to make companies able to protect their and their stakeholders' interests making their value creation and sharing processes sustainable over time (Ponis and Koronis, 2012). Being able to prevent or "manage a corporate crisis is pivotal to a corporation's long-term success" (Kim and Atkinson, 2014 pages 662).

Overall, existing studies focus on the financial and economic aspects of corporate crises and the tools to fix them. This is unfortunate as they offer an incomplete portrait of this complex phenomenon whose implications extend beyond the economic or financial domain and involve environmental or social issues. This is a significant limitation, especially considering recent theories that emphasize that the firm is a place where stakeholders' heterogeneous align one another. For instance, crises involving large companies display that their negative consequences not only impact the shareholders, creditors, or the employees, but also extend to the supply chain and the local communities where corporate facilities are

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located (Janssen et al., 2015). In other words, the economic consequences of the crisis of a large company go far beyond the estimated losses in accounting documents and restructuring plans. The consideration of such effects often induces governments to intervene and assist companies in crisis not only to revive them and restore economic and financial balance but also their competitiveness (Köhler, 2022). Such interventions are justified by collective interests — or the relevance of the sector involved, the impact on employment levels, including those linked to the supply chain, and the well-being of local communities—that overlap with those of the shareholders of the company in crisis. In such circumstances, State intervention seems to represent a solution reconciling economic and social sustainability. However, some cases of large Italian companies in crisis suggest that such intervention has not always produced benefits for everyone, and in any case, the hoped-for results. In particular, stories of public intervention in companies in crisis that have lasted for decades testify to the difficulties of managing a successful restructuring process. In the Italian context, experiences such as those of Alitalia or ILVA indicate the difficulty of finding a balance between interests (economic, social, and environmental) in different time horizons, the short, medium, and long term.

The above considerations suggest a holistic investigation of corporate crises with the considerations of how tensions among different stakeholders and stakes are solved over time (Sun, 2023). Following Coombs (1999), we highlight the information- and knowledge-intensive nature of crisis management, and we contend that to enact efficient and effective processes, gaining the right information and, therefore, the right knowledge at the right time, place, is key to solving a crisis (Coombs, 2010; Sciarelli, 2011). More specifically, we highlight that making sense of corporate crisis' causes, and to take a step forward in its resolution it is essential to consider their potential or real impact on the involved actors. In other words, information is essential to develop and enact specific recovery strategies, and related action plans, such as recovery and continuity plans to restore the conditions of business, economic, and financial equilibrium (Sahebjammia et al., 2015; Tron et al., 2018). These plans represent some of the possible operational tools that a company can use for managing a corporate crisis, and in doing so avoiding failure. Relatedly, communicating the required changes is an inherent component of a crisis management plan.

Purpose of the paper. This work has been conceived as a first step of a major research on the corporate crises that have and are still affecting Italian privatized large companies inspired and directed by the Professor Sciarelli. Thus, he inspired the authors in their contribution to better understanding corporate crises, and the way they are approached, investigating how different stakeholders and stakes are impacted by a corporate crisis over time. To provide a multi-stakeholder and longitudinal analysis of corporate crises, we investigate an Italian firm whose crisis has extended over a long timeline and has presented multiple dilemmas to decision-makers. To achieve this goal, it has been traced how the corporate crisis has been dealt with over time. More specifically, by looking into how corporate communication, newspapers, and press releases have approached it over time. In this way, we aim to offer a better understanding of the way strategic priorities have been set and renegotiated over time, as new issues have emerged and come to play, offering, at the same time, a more comprehensive and longitudinal interpretation of corporate crises and its main challenges from a stakeholder lens. In doing so, we intend to provide multiple contributions. First, we intend to expand the consideration of implications of corporate crises beyond the economic or financial realm and disentangle social and environmental implications over different time horizons. Second and relatedly, we contextualize social and environmental issues during a firm's pathological conditions. In such circumstances, the balance among competing stakes is more difficult to achieve. Our contribution unravels these tensions and may offer important managerial, and policy implications.

Methodology

Research approach

This study is based on an exploratory approach aimed at contributing to the research on corporate crisis management and the way recently privatized Italian corporations have approached crises over time. A qualitative analysis has been conducted performing a case study analysis (Yin, 2003) to offer an in-depth description of the phenomenon under investigation and pave the way for further research. The case study approach can be considered a suitable research strategy as it sheds light on various facets of the phenomenon under investigation, helping to explore a complex phenomenon when hypotheses are difficult to define before collecting research data. In other words, a case study helps to answer “how” and “why” questions (George and Bennett, 2005). As reported by George and Bennett, (2005) a case study helps “to explore a significant phenomenon under rare, unique or extreme circumstances” (p.18).

The analysis fits the extreme case study method, which is particularly fruitful when the research goal is to gather insights about a specific phenomenon by learning from a rare or unusual positive/negative example. This method is used when “the objective is to achieve the greatest possible amount of information on a given problem or phenomenon, [in such circumstances] a representative case or a random sample may not be the most appropriate strategy. This is because the typical or average case is often not the richest in information. Atypical or extreme cases often reveal more information” (Flyvbjerg, 2006, p.222). Drawing on these considerations, ILVA represents an extreme case study because it makes possible to learn from an unusual negative example of how a big Italian corporation handled a long-lasting corporate crisis after the privatization, which affected not only the corporate viability but also its harmful impact on both the local environment and society.

Research setting

ILVA is a long-lasting steel company set in Taranto, whose corporate history started, in 1905 in Genoa when Italy's leading steel companies created the ILVA Consortium in 1911. In 1961, the company merged with Cornigliano Steelworks creating Italsider. In 1965, the steel plant in Taranto started operations as Europe's largest steel producer. Still, the entire industry experienced a decline from 1975 to 1983. In 1995, the Riva Group acquired the Taranto plant, reinstating

the ILVA name. The long history of this primary Italian company passed through four main events a) the establishment of the production facility with direct public management, b) the privatization of ILVA's management, c) temporary receivership, d) the intervention of the multinational ArcelorMittal. Over the years, the ILVA crisis became even more severe because it was alleged of negative externalities for the environment (e.g., dioxins and other carcinogenic emissions) and consequently for local community. At the beginning of the second decade of the XXI century, some analyses and reports demonstrated the increased rates of cancer and other chronic diseases among the population living in the city of Taranto. It was in 2014 that the first formal investigations by Italian and European authorities were presented. In the same period, ILVA experienced changes in ownership and management to make the company able to overcome its long-lasting financial, environmental, and social crisis. To sum up, the ILVA case is extreme because it epitomizes the conflict between industrial and economic development and environmental and public health protection. The Taranto plant is a major employer in the region, contributing significantly to Italy's economy. However, the environmental and health costs have sparked a heated debate about the sustainability of such industrial operations and the necessity of stringent regulatory oversight. The Italian government has intervened on several occasions, either to try to clean up the plant or to take it over temporarily to safeguard jobs while attempting to bring the operations in line with environmental and health standards. Public outcry, both locally and internationally, has been vocal, with protests and campaigns demanding a resolution to the health and environmental crisis.

Data collection and analysis

To better understand the way Ilva (e.g., crisis management strategies, recovery strategies, recovery, and continuity plans, etc.) approached corporate crisis we performed a content analysis (Krippendorff, 2009; Kohlbacher, 2006) to test if and how ILVA communicated to its stakeholders the mechanisms implemented to face corporate crises. Indeed, content analysis “is a research technique for the objective, systematic, and quantitative description of the manifest content of communication” (Berelson, 1954, p. 489). This method is particularly suitable to address the research topic under investigation because it “involves an inductive exploration of the data to identify recurring themes, patterns, or concepts and then describing and interpreting those categories” (Nassaji, 2015, p. 130). The analysis was conducted on 150 documents (reports, news, etc.), selected according to a convenience sampling strategy (Etikan et al., 2016), a strategy implemented for collecting data when a sampling frame is not easy to define, allowing the selection of the sample units according to their accessibility (Bryman, 2012). To this end, the following selection criteria were set, accessibility, source (or authorship), and topic relevance and consonance with the main purpose of the study. Thus, documents dealing with the case company crisis and the related recovery strategies and plans published by the company itself and/or other stakeholders (government, media, analysts, citizens, etc.) over the last 12 years were selected to investigate stakeholders' perception of the way it managed the crisis with a special focus on the way it used the governmental recovery measure. The timeframe was set after the investigation of the ILVA history; thus, 2012 represents a critical milestone for the case company because this year the first forensic examinations were presented, and the national authorities seized the Taranto plant.

Documents were selected performing an open-ended iterative search process (Finfgeld-Connett and Johnson, 2013), based on ongoing searching, reading, and refining of the research problem. This process was conducted by 1) searching, 2) sorting, 3) selecting, 4) acquiring, 5) reading, 6) identifying, and 7) refining documents.

The first step (searching) was conducted by checking the title and the occurrence in the title and executive summary of some keywords that represent the topic under investigation, 1) corporate crises, 2) recovery, and 3) state intervention. In this way, it was possible to sort and select documents as well as to make them comparable. Moreover, after the first screening, these documents were organized to be used for the content analysis (Tab.1).

Table 1: Sampling criteria

Sampling criteria	
Topics	Corporate crises, recovery, state intervention
Data sources	Media, institutional, and corporate online databases
Authorship	case company, media, NGOs, institutions, citizens
Publication date	from 2012 to 2024
Language	Italian

Source: Authors' elaboration

This process led to sorting 150 documents, which were comparable and met the aforementioned criteria. These documents were written in Italian, accessible online, and dealt with the ILVA crisis. The analysis was conducted in Italian, but the results were translated into English. After this iterative process, the reports were analyzed according to some main elements dealing with crisis management derived from the literature. The quality of the analysis was ensured through 1) the construct validity, related to the achievement of suitable operational measures for analyzing concepts related to corporate crises, and 2) the internal validity, related to the appropriateness of the content analysis items (or themes), by triangulating different data sources, such as other reports, online news, webinars, etc. (Mason and Bramble,

1989). The content analysis was based on three main phases: 1) preparation, 2) organization, and 3) reporting (Elo and Kyngas, 2008). During the preparation phase, two researchers collected data (documents and news related to the ILVA crisis over time publicly available on websites or by requesting download permission, according to the selected sample criteria (see Tab.1). A dictionary containing the keywords derived from the extant literature was developed and used for the analysis. It consisted of a list of words organized into two main coding categories: 1) Corporate crisis, and 2) State intervention. Into this list, singulars and plurals were grouped, articles, auxiliaries, and prepositions were dropped out, while keywords' consistency was ensured using an English dictionary of synonyms and antonyms.

The organization phase consisted of a codebook (made up of categories, and keywords), used for organizing the results obtained. Two researchers independently checked the codebook for consistency. The content analysis supported the interpretation of the quantitative count of the coded texts descriptively. In doing so, some content units (or "observations" in inferential statistics) were defined. Each sentence reported in the analyzed documents was considered a content unit, which set the limits on the information to be considered in the description" (Krippendorff, 2009, p. 101), while the word was set as a unit of analysis. Finally, the reporting phase consisted of the organization of the units of analysis (words) into the coding categories defined before starting the analysis. Words' detection and counting were conducted using Maxqda software. A word-count matrix was created to organize results, according to some specific categories defined according to the authorship and/or the subject who published information or talked about a specific issue related to the ILVA long-lasting crisis. This contributed to making results easily comparable.

Table 2: Coding categories and keywords for the content analysis

Coding categories	Keywords
Corporate crisis	citizens, compulsory administration, crisis management, data breach, decline, earning crisis, disclosure, environment, environmental impact, ESG, financial exposure, information asymmetries, insolvency, failure, law, liquidity crisis, misconducts, moral hazard, natural disaster, optimization, people, privacy scandal, pollution, profitability crisis, public health, quality, restructuring, recovering, society, risk, sales scandals, social impact, sustainability,
State intervention	Action plan, compensation, criticalities, direct intervention, financing program, government, indirect intervention, incentives, institutions, local development, job protection, monopoly, nationalization, national development, national economy, privatization, public-private partnership, planned economy, policies, regulation, protection, public resources, state intervention, state participation.

Source: authors' elaboration.

Results. While the empirical analysis is still ongoing, in this section we present some interesting preliminary results. More specifically, our findings refer from the content analysis on the 45 documents out of the 150 (see table 3) tables. Thus, starting from the original 60 keywords associated with the 2 coding categories, and due to their adherence to the selection criteria, just 127 keywords were detected. Some keywords were not retrieved into the analyzed documents, and those with less than 40 occurrences were not considered. Therefore, 5 keywords did not occur (ESG, information asymmetries, optimization, cooperation, nationalization) and 12 did not exceed 40 occurrences (crisis management, data breach, financial exposure, liquidity crisis, misconducts, moral hazard, privacy scandal, profitability crisis, quality, sales scandals, monopoly, public-private partnership, planned economy) (Tab. 3).

Table 3: Keywords with no occurrences for each kind of analyzed document

Case Company	Media	NGOs	Institutions	Citizens
	ESG	ESG	ESG	ESG
information asymmetries	information asymmetries	information asymmetries	information asymmetries	information asymmetries
	Optimization	Optimization		optimization
cooperation		Cooperation		cooperation
nationalization	Nationalization	Nationalization	nationalization	nationalization

Source: Authors' elaboration.

Our results indicate that the most recurrent keywords in the documents (with more than 100 occurrences) were compulsory administration (108), risk (111), natural disaster (124), environment (221), law (155), pollution (188), people (190), sustainability (197), public health (204), environmental impact (211), belonging to the first coding category "Corporate crisis". The most occurrent keywords of the second category named "State intervention" are criticalities (112), indirect intervention (117), state participation (160), public resources (166), national economy (177), direct intervention (187), job protection (197), state intervention (209), privatization (187), protection (159).

The preliminary analysis has been conducted without grouping the achieved results into five different categories, defined according to document authorship (case company, media, NGOs, institutions, citizens). However, the results obtained from the content analysis were further analyzed focusing on the inner meaning of each keyword. It is not

surprising that the most recurrent keywords are environmental impact (211), and environment (221). This is mainly due to the long-lasting environmental impact that ILVA activities have had over time. In fact, when the Taranto plant was created, it was meant to be strategic “for the Italian economy since the industrialization following the Second World War. Unfortunately, in those last decades of the twentieth century, the ecological conscience was almost nonexistent” (Rinaldi, 2018, p.25). Therefore, it took some decades to make public opinion aware of the sustainability-related risks associated with the ILVA steel plant in Taranto, whose levels of pollution started to worry the Italian authorities and the European Union Commission in the first years of the XXI century.

The first condemnation for environmental pollution came in 2005, when the ILVA group, one of the most strategic Italian companies, was recognized guilty of severe environmental pollution dangerous for public health (Supreme Court, 28 September 2005, No. 38936). If the high number of occurrences of the keywords environmental impact, and environment is due to the ILVA unsustainable approach to operations, it is worth noting that this has had and still has negative consequences for both human and animal health (Lai et al., 2019), as the high number of occurrences of the keyword public health points out. To counteract this situation, Italian authorities forced ILVA to comply with the environmental legislation and to fix the socio-economic damages caused by its production activities. In fact, in 2012 an epidemiological appraisal reported the rising number of chronic diseases (especially cancer) among people working at the ILVA plant and in the city of Taranto. Consequently, in the same year (on the 26th of July) a court ordinance stopped the operations of this company, accused of environmental hazard. This led also to a better understanding of the high number of occurrences of the keyword natural disaster (124). However, it is worth noting that the case company did not comply with environmental standards for many years (European Commission 2017). This ordinance caused some tensions between the Italian Judiciary Authority and the Italian Government; thus, “in contrast with the Magistrate’s decision, in October 2012 the Environment Ministry promulgated a decree containing prescriptions with the aim of guaranteeing business continuity, and consequently job protection (which is a keyword occurring 197 times) imposing a compulsory administration” (Lai et al., 2018, p.73). This contributes to better understand the reason why the keywords compulsory administration (104) and state intervention (209) highly occurred. Moreover, it is often associated with the traditional “welfare state”, which since the 1950s has been based on state interventions both in the economic and social spheres (Turco and Leopizzi, 2020). Over time, this intervention has been progressively reduced and rationalized, limiting it to face critical situations, discourage unfair competition, and guarantee products/services essential for both the national economy and people’s wellbeing. This implies that the Italian state tends to act as a “last resort regulator” able to solve critical situations and challenge socio-economic risks (Gouldson and Bebbington, 2007). This contributes to better understating why state intervention is among the most occurrent keywords together with environmental impact, environment, and public health. In fact, when environmental and social risks occur, the state intervene[s] only as a regulator of last resort where issues are of such significance that guarantees are needed or where other forms of regulation fail” (Gouldson and Bebbington 2007, p. 7).

Managerial Implications. Although preliminary, our findings bear important managerial implications. The ILVA experience suggests that a crisis cannot be fixed by only looking at economic or financial figures. ILVA experience shows that the balance among different stakes is difficult to achieve, especially in the face of economic pressures and regulatory challenges, and that environmental and health issues should be considered together with the economic conditions.

Originality of the paper. To the best of our knowledge this is the first attempt to study a corporate crisis looking at how environmental, societal and competitive issues are balanced over time. Our study is also an attempt to investigate sustainability issues and practices in a pathological condition, such as a corporate crisis.

Research limitations. Our work is not free from limitations, which in turn provide opportunity for future research. At this stage, the primary limitation is that our findings refer to an extreme case study, which are not generalizability to other settings. Future research can integrate these findings in two ways. First, by performing additional case studies taking into account different industry and institutional conditions. A further step towards the generalizability of these findings is conducting survey on large sample of crises to investigate the most effective policies, strategies and plans to be implemented to overcome these situations. A second important limitation of our study is that it is based on secondary data only. Future research can address this issue by collecting primary data from the multiple stakeholders involved in and affected by a corporate crisis.

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Knowledge sharing and learning: face-to-face and ICTs

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Abstract

In complex work contexts, requiring significant experience, individuals continuously share knowledge to perform their activities effectively. Here, only formal education may have little impact, as opposed to spontaneous forms of learning. This paper explores how different types of learning - contextual, experimental, reflexive, and vicarious learning - occur when individuals perform fieldwork-based activities together. By focusing our investigation on a unique context: Abruzzo, Lazio, and Molise National Park (PNALM), we observe the role of face-to-face and digitally based interactions for knowledge sharing. Qualitative data were collected with interviews and content analysis was used to identify the main themes. First of all, we found that contextual and vicarious learning mostly occurs with face-to-face interactions. Conversely, ITC also proven to be a valuable tool for supporting learning, particularly reflexive learning. Secondly, we demonstrated the fundamental role played by fieldwork-based and office activities in different types of learning. Finally, we discussed how the four typologies of learning impact on explicit and tacit knowledge. In conclusion, we contribute to academic literature on knowledge sharing and learning by identifying underlying mechanisms and tools facilitating these processes.

Key words: Learning, knowledge sharing, knowledge, communication tools, groups.

Framing of the research. Knowledge assumes an important role as a resource providing the fundamental assets for organizations engaged in complex environments (Bosua & Scheepers, 2007; Davenport & Prusak, 1998; Kraus et al., 2021). While the business activities require even more coordination, information exchange, and specific know how, it becomes indispensable for individuals to continuously learn (Edmondson et al., 2007). Organizational literature widely analysed learning and focused on how learning processes take place during different organisation activities, how individuals share their knowledge each other's or with other teams at different levels (Hansen et al., 2005; Lemmetty & Collin, 2020; Nonaka, 1994; Nonaka & Takeuchi, 1995; Pisano, 1996). Research on individual and group learning could deepen our understanding of the factors that drive knowledge sharing, thereby enhancing individual and team learning capabilities, as well as their know-how and skills. In this context, knowledge sharing is the essential means through which individuals can contribute to the increasing effectiveness in performing activities, innovation, competitive advantage and finally the performance of the organizations (Cabrera et al., 2002; Davenport & Prusak, 1998; Wang & Noe, 2010).

In uncertain and complex work contexts requiring continuous collaboration, trust, and significant knowledge, extant studies provide little insights on individual learning processes taking place while they are working in groups in these fields. Uncertainty refers to challenging conditions such as hard-to-reach locations, shortages of resources, or the absence of enabling technologies (Bosua & Scheepers, 2007; Duncan, 1972; Schulz, 2001). Complexity refers to the requirement of significant experience to make complex decisions or perform complex activities (Duncan, 1972; Vasconcelos & Ramirez, 2011). It therefore becomes increasingly important to understand how, on which occasions, and by what means individuals share their knowledge.

Nonaka and Takeuchi (1994; 1995) identified four typologies of learning according to the level: individual learning, group learning, organizational learning, and inter-organizational learning. We focus on how individuals learn within groups. The process where they, through intuition and interpretation, generate new insights, modify traditional mindset, and develop competencies by experimenting. Starting from the classification, Harvey, Bresman, and Edmondson (2018), in their study focused on team learning and cognitive capabilities, they developed a framework composed by four categories of learning: reflexive, experimental, contextual, and vicarious learning. Accordingly, reflexive learning refers to the activities in which the team analyses and evaluates previous information, experiences, or past actions by which the members become able to increase the efficiency and the quality of their outcomes. To increase their performance, the team develop new ways of doing tasks based on what they have learned (Edmondson, 2002; Harvey, Bresman, & Edmondson, 2018). Reflexive learning occurs while performing internal, exploitation-oriented activities concerning information sharing, analysis, and storing. Usually, it ensures efficiency and performance improvements because teams

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evaluate past events (Harvey, Bresman, Edmondson, et al., 2018b). Contrary, experimental learning takes place when action precede the cognition (Crossan & Sorrenti, 1997). It occurs when team members develop new knowledge or insights through experimentation or test (Edmondson, 2002). Sequently, the third form of learning is defined contextual learning. It allows teams to learn from external sources relying on the key aspect of the context in which they learn (Bresman, 2010). The last type of learning, according to literature, is vicarious learning. Vicarious learning refers to the possibility to learn from the experience of the others with prior or major experience of who is learning (Bresman, 2010; Myers, 2021). Therefore, learning has been recognized as a process that is both social and collective phenomena (Teece et al., 1997; Teece & Pisano, 1994) because what individuals learn is linked with their social context and reflect what they put it into practice (Brown & Duguid, 2001).

Following Edmondson (1999; 2002), we refer to knowledge as the principal result of learning processes. Accordingly, she studied how it is discovered and applied through learning enabling teams to find solutions that were not previously addressed (Sole & Edmondson, 2002). As widely cited in the literature, knowledge can be classified as tacit and explicit. Tacit knowledge refers to beliefs, mental models and individuals' perspectives that is hard to formalize or share with others (Nonaka, 1994; Polanyi, 1967). Tacit knowledge resides in human brain and cannot be easily captured or managed, but it can be observed through actions. As business environments become increasingly complex and uncertain, there is a growing necessity for a deeper understanding of the role played by tacit knowledge (Kenneth, 2007; Polanyi, 1967). In contrast to the tacit dimension, explicit knowledge can be expressed in words or number and represents a minimal part of all the possible knowledge. Explicit knowledge refers to the knowledge that can be articulated in formal language and can be easily transferred to others (Nonaka & Toyama, 2003; Polanyi, 1967).

In this context, knowledge sharing is the ability to transfer previous experience, information, know how, explicit, and tacit knowledge between individuals (Cummings, 2004; Hansen et al., 2005; Kenneth, 2007). It is a mean by which organizations create and make knowledge available to the others (Christensen, 2007; Cummings, 2004). Individuals share their knowledge through both traditional and ICTs communication tools as they differently convey various types of information and support knowledge sharing. Communication tools such messaging platform, mobile call, e-mail as well as other technologies to collect and share information in real time based on IoT, sensors, and database are implemented to ensure the flow of information needed for complex business environments (Cantù & Corsaro, 2007; Ngah & Jusoff, 2009; Paroutis & Saleh, 2009).

Even though the literature on knowledge sharing increases, the discussions are mainly focused on how it is shared, in terms of best practices and process that consider knowledge as a "stock" to be transferred (Christensen, 2007). While the stock represents what has been learnt, Bontis and others (2002) studied how this stock can evolve over time (Kogut & Zander, 1992; Nonaka, 1994a). It is both important to recognize how this stock develop and how individuals take these new insights (Bontis et al., 2002). With the diffusion of ITCs, these processes have become increasingly effective in acquiring and exchange knowledge (Bennet & Tomblin, 2006; Edmondson et al., 2001; Ruiz-Mercader et al., 2006) because ITCs enhanced the availability of communication channels and facilitated access to information (Bennet & Tomblin, 2006).

Literature provided several insights on the use of ITCs in learning processes. Levitt and March (1988), and Teece (1994) focused on balancing exploration and exploitation to sustain organizational performance. Learning processes can also be influenced by individuals who use the technology (Garfield et al., 2001), the style of management (Aranda et al., 2014), the organizational conditions, and employees' networks and relationships (Grandon Gill, 1995; Harris, 2010; Lave & Wenger, 1991; Wenger, 2008).

Purpose of the paper. While formal education, especially in continuous changing organization environments may be limited, we observe how different forms of learning - contextual, experimental, reflexive, and vicarious learning (Harvey, Bresman, Edmondson, et al., 2018) - occur when individuals are working in highly complex contexts (Burns et al., 2005; Choi et al., 2009; Enos et al., 2003). These conditions clearly elicit the presence of tacit knowledge since it is embedded action and context (Nonaka, 1994). Additionally, to carry out business activities in these contexts, individuals are engaged in a network in which relationships are increasingly supported by both face-to-face interactions and digitally mediated interactions (Razmerita, Kirchner, et al., 2016; Razmerita, Wren, et al., 2016). Depending on their activities, individuals utilize various communication tools, ranging from traditional to technological tools (Aljuwaiber, 2016). Consequently, these options delineate diverse modes of communication, information exchange, and knowledge sharing.

The aim of this paper is to explore how different types of learning occur in organizations characterized by a complex and uncertain environment, where both live and technology-mediated interactions are essential, and there is a strong component of knowledge sharing. Particularly, we aim to unpack learning processes by focusing on facilitators that we identified from the literature and interviews: communication tools and organisation activities, with the scope to understand how learning through practice shape in knowledge. Therefore, our research question which lays the foundations for this paper is:

How do communication tools and activities impact on learning processes? How does learning processes shape knowledge within complex organisations?

Methodology. The research method is based on a single case study (Yin, 2003) developed with primary data collected through documental analysis and open-ended interviews (Oppenheim, 2000). We developed an in-depth case study by analysing internal relationships, learning activities, individual and organizational knowledge, and finally, the role played by communication tools in these processes within PNALM. We settled on this single case study as it provides valuable insights to deeply explore the learning processes during the activities that the organization directly perform within the real-world context. The national park context is an attractive setting in which our phenomenon of interest could be directly

observed since this context provides high visibility of teams and groups behaviour dealing with a dynamic, uncertain, and complex work on the field. More specifically, the work activities, to be carried out, require a deep knowledge of the surrounding natural environment and the species, the capacity to make decisions in a short time, and, above all, a high propensity for trust and teamwork.

These characteristics that actors must cope with, while working in the national park, create a context in which continuous learning, especially through direct experience on the field and from more experienced actors is critical. Additionally, these learning activities are also related to a strong heritage of tacit knowledge. Tacit knowledge is usually hard to express, articulate, or document (Nonaka & Takeuchi, 1995), and, in this context, it takes a leading part in carrying out the activities and must be continuously shared among team members. In addition, this empirical context is also valuable for the presence of a complex technology adoption supporting all the activities and the interactions among individuals forming a network supporting all the internal actors in addressing their purpose.

The particular and challenging environment in which work activities take place, together with the importance of relationships and the use of technologies in diverse types of activities, makes this context ideal to observe how individuals learn within groups and how knowledge sharing processes occur.

Firstly, we conducted the documental analysis to ensure validity by using multiple sources of evidence. This analysis included information and details such as the organization's initiatives and collaboration, the involved actors, their activities, adopted technologies, the organizational structure, their future projects, and events. Secondly, after conducting the documental analysis, we collected primary data with open-ended interviews. The interviews started with general questions about the interviewees' first experience and their career path. The questionnaire was composed of introducing questions, five sections concerning monitoring activities, technology, personal relationships, data sharing, external collaboration, and further questions to conclude the session. To let the insights emerge, we conducted 16 interviews with multiple employees and actors within PNALM belonging to different organization's sectors: direction, scientific sector, communication sector, rangers, and a tech company providing IoT technologies. The first interview lasted 2 hours and the subsequent approximately 1 hour. All the interviews conducted have been recorded, transcribed, and coded in order to identify all the relevant topics and develop the case study.

Thereafter, we applied the content analysis method to analyse the interviews. The pre-coding phase has been carried out starting from the development of a dictionary structured with the most relevant concept found. This phase consisted of a preliminary analysis where we highlighted the most frequent keywords from the interviews looking for relations with the literature (Creswell, 2014). In the coding phase, we deeply analysed the interviews, selected parts of the text, and assigned them to nodes. The selected nodes have been split into sub-nodes based on the contents. 10 variables were identified following the organizational literature and coded into nodes using NVivo software. We based our methodological approach following (Gioia et al., 2013). This methodology implies a qualitative interpretation of data able to meet the high standard of rigor in research.

Results. We developed a model that demonstrates the pivotal role of organizational activities and the use of communication tools in facilitating learning. This process contributes significantly to the sharing and acquisition of knowledge by individuals. Our results highlight how the learning process unfolds through diverse activities and communication tools, ultimately how forms of learning play a crucial role in shaping in types of knowledge by the end of the process. To achieve this result, we unpacked the learning processes by observing them from different perspectives. In order to ensure a comprehensive perspective on the learning processes, we conducted interviews with both who were acting as mentors, such as the more experienced members, and the learners, including newcomers and apprentices. First of all, we highlighted how learning takes place through the use communication tools. We demonstrate that contextual and vicarious learning mostly occurs with face-to-face interactions. We argued the importance of face-to-face interactions as a learning driver within organizations.

ITC also proven to be a valuable tool for supporting learning, especially reflexive learning. Not surprisingly, reflexive learning is the form of learning through which individuals analyse their owned information, processes, or output. We underlined the importance of learning through the discussion of what they know or do, in order to continuously refine or improve their internal processes. Indeed, the discussion and analysis of their processes or knowledge enabled them to uncover new insights into wildlife behaviours. Perfectly consistent with our obtained results, while face-to-face interactions proved to be relevant for reflexive learning, ICTs also support the process by improving the capacity of communication means and information sharing, especially when group members are working over great distances. Conversely, as we found that reflexive learning occurs in a more balanced manner between face-to-face interaction and ICT-based interaction, the result is not surprising because this type of learning happens more during office activities.

We further demonstrated that various activities have distinct impacts on the learning process. Particularly, our results show how fieldwork-based activities, office activities, and formal education and training activities influence the types of learning differently. Our model demonstrates the fundamental role played by fieldwork-based activities in contextual and vicarious learning. We found that, with minor impact than practice, also office and formal education activities may support learning processes in dynamic contexts.

Finally, we demonstrated how the four typologies of learning impact on explicit and tacit knowledge. Accordingly, experimental and reflexive learning are mostly effective in facilitating the sharing of explicit knowledge as is contextual learning as well. All the newcomers learned to recognize species, acquired knowledge about their behaviours and habits, mastered the use of technologies, and developed skills in surveillance and data collection. This clearly falls into the

category of explicit knowledge. Moreover, contextual learning effectively shapes explicit knowledge while concurrently facilitating the sharing of tacit knowledge occupying an intermediary position. Furthermore, the most significant findings reveal crucial insights in the relationship between vicarious learning and knowledge. We provide evidence that vicarious learning is an effective process that mostly give shape to tacit knowledge.

Research limitations. Even though we provided new insights in learning processes within groups, our study has certain limitations. As it is based on a single case study, it may limit the boundary of findings generalizations. We suggest future studies to replicate this research in other contexts or develop a multiple case study. It guarantees to improve the results by multiplying the patterns found, ensuring the enhancement of robustness of the findings (Yin, 2003)

Since we focused mostly on fieldwork-based and office activities, our findings could be compared by exploring further types of activities. For example, future studies could compare how learning occurs in workplace and during formal education or training programs. We also recommend further research to study more in depth the single typology of learning since more insights could be found at lower levels of analysis.

Managerial implications. Understanding how individuals learn over time while engaged in various organisational activities, may lead to both theoretical and practical insights. This study offers a comprehensive analysis of the occurrence of learning processes in work contexts. Organizations could benefit from our findings since they may improve knowledge sharing and learning processes by actively managing interactions and activities of members.

We highlighted how specific activities and communication tools facilitate learning processes. More specifically, this is achievable by setting specific interactions and indicating the right communication tools for the activities. Indeed, we demonstrated that face-to-face and digitally mediated interactions have different impact on knowledge sharing. For example, organizations can foster face-to-face interactions to improve vicarious learning. Conversely, they can exploit digital communication tools for improving contextual learning. The same applies to the activities: individuals can perform different activities and learn differently. Organizations can recognize the strategic importance of selecting employees for specific activities based on their experience and their level of expertise. By making strategic use of activities to learn, it could help organizations fill in specific weaknesses.

Finally, by linking learning to the type of knowledge, various opportunities emerge. Organizations could indirectly foster the sharing of tacit and explicit knowledge by selectively enhancing specific types of learning.

Originality of the paper. Our model underscores that the presence of the four diverse forms of learning guarantee organizations a seamless knowledge-sharing process, thereby preventing the occurrence of knowledge losses or gaps. Likewise, our model emphasizes the importance of vicarious learning as a facilitator of tacit knowledge; the form of knowledge that, by definition, is the most difficult to transfer and easy to lose (Nonaka & Takeuchi, 1995).

Our results agree the fact that the typologies of activities, associated with different communication tools, facilitates learning processes. For its part, learning shapes knowledge depending on how the entire process is structured, according to the nature of the activities and the interactions.

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How do stakeholders perceive the impacts of Nature-based solutions? An Italian case study for coastal restoration and climate change adaptation

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Abstract

The escalation of natural disasters linked to climate change has underlined the urgent need for effective risk management strategies to mitigate their adverse impacts on communities and economies. To address this, there is a growing emphasis on integrated ecosystem-based approaches, in particular Nature-based Solutions (NBS). NBS offer multiple benefits, including increased resilience and various societal, environmental and economic benefits. However, it is essential to conduct comprehensive evaluations considering both positive (benefits) and negative (costs) impacts across diverse domains. Our study aims to bridge existing gaps in the literature by analyzing potential synergies and trade-offs arising from NBS implementation. Building on previous research, we propose a participatory approach to assess stakeholders' perceptions of the economic, social, and environmental costs and benefits associated with NBS implementation. Through a case study in the Tuscany region as part of the Horizon project Regions4Climate, we seek to categorize stakeholders based on their impact and influence on NBS, providing valuable insights from both theoretical and practical perspectives. The anticipated outcomes include a framework mapping costs and benefits associated with NBS implementation against stakeholder perceptions, highlighting potential trade-offs and synergies, and a novel stakeholder classification based on impact intensity and influence degree.

Key words: *climate change; adaptation to climate change; nature-based Solutions; NBS; coastal flooding; coastal restoration; stakeholder theory; stakeholder engagement; horizon project*

Framing of the research.

Climate Change, coastal flooding and coastal restoration

In recent years, the escalation of disasters stemming from natural hazards, particularly those linked to climate change and variability such as floods, droughts, and heatwaves, has underscored the imperative for effective risk management strategies to mitigate their repercussions on the built environment, communities, and the economy. Over the period from 1980 to 2022, the economic losses inflicted by climate-related events across European member states averaged approximately € 650 billions of which € 59.4 billions in 2021 and € 52.3 billions in 2022 (EEA, 2023).

Erosion and coastal inundation induced by storm surges and waves similarly imperil human infrastructure and ecosystems (Hinkel, et al., 2014). The imperative to reduce risks from coastal storms has catalyzed endeavors to expand the utilization of integrated ecosystem-based methodologies, such as Nature-based Solutions (Van Slobbe, et al., 2013). A growing body of evidence suggests that NBS can effectively mitigate risks (Ferrario et al., 2014; Spalding et al., 2014) by leveraging the inherent capabilities of wetlands, beaches, dunes, reefs, and other natural features to alleviate the impacts of storm surges and waves (Temmerman et al., 2013). Indeed, coastal protection strategies grounded in natural approaches have gained in prominence since they have been incorporated among viable Disaster Risk Reduction (DRR) strategies in several European directives (Council Directive 92/43/EEC, 1992; Directive 2001/42/EC, 2001; Directive 2011/92/EU, 2011; EC, 2009). Natural and nature-based solutions can, thus, fortify the resilience of coastal regions threatened by sea level rise (Borsje, et al., 2011) and coastal storms (e.g., Gedan et al., 2011; Lopez, 2009).

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Nature-based Solutions

While the delineation of NBS remains subject to debate (Nesshöver et al., 2017), the prevailing conceptualizations draw upon frameworks articulated by the International Union for Conservation of Nature (IUCN) and the European Commission (EC). IUCN defines NBS as “actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits” (Cohen-Shacham et al, 2016). Conversely, the European Commission characterizes NBS as methodologies to tackle societal challenges with “solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social, and economic benefits, and help build resilience” (EC, 2016.)

A common thread among these definitions is their multifunctionality (Kabisch et al., 2016), denoting their capacity to concurrently fulfill multiple functions to deliver a suite of associated ecosystem services that bring benefits to society, the economy, and the environment (Albert et al., 2017). Various additional characteristics proposed in scholarly literature encompass cost-effectiveness (Keesstra et al., 2018; EC, 2016.), adaptability (Cohen-Shacham et al, 2016), a problem-centric approach (Potschin et al, 2016), the utilization of participatory processes for co-design, co-creation, and co-management (Pauleit et al., 2017) and reliance on multidisciplinary, evidence-based strategies (Nature, 2017).

Nevertheless, certain ambiguities persist. A primary challenge involves delineating the boundary between what constitutes ‘nature’ or ‘natural’ and what does not (Nesshöver et al., 2017). Furthermore, the relationship between NBS and established ecosystem-based approaches is contentious (Eggermont et al., 2015; Maes & Jacobs, 2017; Raymond et al., 2017). Another area of contention pertains to the relationship between NBS and innovation, with some asserting the latter as a central tenet of such solutions (Bauduceau et al., 2015; Potschin, 2016), while others omit it entirely (e.g., Cohen-Shacham et al., 2016; Keesstra et al., 2018).

In conclusion, NBS can be conceptualized as an “umbrella term” encompassing a broad spectrum of concepts and practices (Nesshöver et al., 2017; Pauleit et al., 2017). The robustness of NBS lie in its holistic approach to address societal challenges and yield multiple co-benefits (Favre et al., 2017; Nevens et al., 2013). These co-benefits emanate from the multifunctionality of NBS and encompass diverse issues such as augmented landscape values for society, biodiversity conservation, pollution mitigation, enhancement of health and well-being, reduction of GHG emissions, and creation of green jobs (Cohen-Shacham et al., 2016; Raymond et al., 2017). Correspondingly, ecosystem disservices should be construed as co-costs (Calliari et al., 2019). Notably, to comprehensively evaluate the impact of NBS, it is imperative to assess both the positive (benefits) and negative (costs) impacts across various domains, discern their potential synergies and trade-offs, and detect their implications across diverse challenge areas. Moreover, it is essential to account for stakeholder heterogeneity, as it engenders differences in the perception and evaluation of co-benefits.

Stakeholders’ engagement

Numerous stakeholders, defined as “any identifiable group or individual who can affect the achievement of an organization’s objectives, or who is affected by the achievement of an organization’s objectives” (Freeman & Reed, 1983) are involved in concerns regarding the protection of ecosystems (e.g., local authorities, environmental associations, and the local population), whose interests necessitate consideration (Brechin et al., 2002; Kapoor, 2001). Therefore, identifying and addressing stakeholders’ values, interests, and knowledge constitutes a critical step to ensure a well-functioning process and to address potential conflicts, issues, and constraints that may arise.

Previous research has examined the benefits associated with stakeholders’ engagement in environmental management projects. These benefits can be broadly classified under normative and pragmatic arguments for stakeholder engagement in environmental decision-making (Pistorius & Reinecke, 2013; Reed, 2008; Young et al., 2007).

Moreover, the literature on stakeholder participation distinguishes between the degrees of stakeholders’ engagement and establishes a hierarchical nature of engagement ranging from passive dissemination of information to active engagement and transformative participation, implying a preference for higher levels of engagement over lower levels (Arnstein, 1969; Biggs, 1989; Farrington, 2014; Goetz & Gaventa, 2001; Lawrence, 2006; Pretty, 1995). However, recent studies argue that different levels of engagement are likely appropriate in varying contexts, contingent upon the objectives of the work and the stakeholders’ capacity to influence outcomes (Richards et al., 2004; Tippett et al., 2007). Reed (2008) suggests that stakeholder participation may enhance the quality of environmental decisions, with one strong caveat: the quality of a decision heavily relies on the quality of the process leading to it. He advocates for an approach that views participation as a process, emphasizing empowerment, equity, trust, and learning.

Capitalizing on all of this, within the Horizon project “Regions4Climate”, a consortium of experts will implement a Nature-based Solution in Tuscany Region (Italy) aimed at ameliorating the adverse impacts and damages caused by coastal flooding and storms, through a project centered on dune restoration.

Purpose of the paper. Acknowledging the multifunctionality of NBS and their capacity to deliver advantages to numerous stakeholders have become pivotal. Given the involvement of a multitude of stakeholders with distinct interests, and problem understandings in NBS implementation, multiple - sometimes conflicting - values and perceptions coexist.

Many previous studies demonstrate limited capacity to analyze potential synergies and trade-offs arising from the coexistence of different benefits and costs move beyond a compartmentalized assessment, and fail to address how they depend on stakeholder groups considered (Calliari et al., 2019; Narayan et al., 2017; Viti et al., 2022).

Our research seeks to address these gaps providing a more holistic perspective examining the relationships between the various impacts of nature-inspired strategies.

Additionally, we believe that by categorizing different stakeholder on the basis of the level of impact of NBS on them, and the degree of influence exerted by them, we can offer valuable insights from both theoretical and practical

standpoints. Our framework is intended to be a valuable tool for policymakers and decision-makers, enabling a better understanding of local actors' perceptions of NBS and facilitating more effective communication and stakeholder engagement.

Therefore, this paper aims to address the following questions:

1. What are the primary benefits and costs that stakeholders identify within the implementation of NBS for coastal restoration?
2. What synergies and trade-offs can potentially emerge from the aforementioned co-benefits and co-costs according to different stakeholder groups?
3. Based on the analysis of stakeholders' perceptions and interests, how can we classify different categories of stakeholders considering the impacts of NBS and the influence exerted by the stakeholders?

Methodology. To address these questions, we aim to conduct a case study in the Tuscany region of Italy as part of the Horizon project Regions4Climate. The Tuscany project aims to address coastal flooding and consequent adaptation strategies through the implementation of a Nature-based Solution. Specifically, the solution involves the restoration of the dune ecosystem using a nature-based approach, with the project duration spanning from 2023 to 2027.

The case study aims to organize workshops with various categories of local stakeholders during the second year of the project. Hence, this study proposes a participatory approach to assess stakeholders' perceptions of economic, social, and environmental costs and benefits associated with NBS implementation, with a specific emphasis on their capacity to generate co-benefits and co-costs.

Given the objectives of our investigation, we find the case study methodology to be appropriate as it offers flexibility for conducting thorough analyses at localized levels, striking a balance between breadth and depth (Taylor, 2016). Additionally, it ensures a multi-dimensional approach by enabling examination of various facets from diverse perspectives (Eisenhardt, 1989; Yin, 1981).

Stakeholder Selection

The selection of stakeholder groups for analysis was pivotal. The aim was to minimize selection bias and stakeholder marginalization (Ananda & Herath, 2003; Reed et al., 2009). This selection was conducted in a two-stage process. Initially, a panel of experts involved in the project compiled a list of local stakeholders, as summarized in Table 1. Subsequently, this list was validated through data triangulation, drawing from previous academic studies on the subject. The most pertinent categories identified in the literature encompassed public managers and decision-makers (provincial and municipal government), scientific and technical experts, educational institutions, entrepreneurs (directly and indirectly related enterprises), and representatives of social groups and NGOs (Guan et al., 2022; Liquete et al., 2016a)

Table 1. Stakeholders identified by R4C partners (panel of expert discussion).

Researcher and scientific community	Policymakers and local authorities	Business, entrepreneurs and investors	Industry associations and civil society	General Public
<ul style="list-style-type: none"> • CMCC • ENEA • University of Bologna • ARPA • University of Florence • University of Pisa • University of Trieste 	<ul style="list-style-type: none"> • Piombino municipality • Parchi Val di Cornia society • Drainage consortium Val di Cornia • San Rossore regional Park entity • Maremma park • Gargano national Park • San Vincenzo municipality • Follonica municipality • SNPA • Marine protected area Capo Carbonara • Civil defense • Tuscany Region 	<ul style="list-style-type: none"> • Val Cornia Park • Banca Intesa Sanpaolo • Generali Assicurazioni • Livorno Foundation • Tuscany Environment Foundation • Banca del Monte di Lucca • Cassa di Risparmio di Carrara Foundation • Unioncamere Toscana • GNRAC • Beachmed • Mar Tirreno Settentrionale Port system Authority 	<ul style="list-style-type: none"> • Legambiente • Federturismo • Italian Environment Fund • Confindustria • WWF • Greenpeace • TartAmare • Lipu • Federalberghi 	<ul style="list-style-type: none"> • AIAT • Engineers Association

Identification of Costs and Benefits (in progress)

Similar to previous studies (Calliari et al., 2019; Liquete et al., 2016b; Raymond et al., 2017), we are employing an integrated valuation method that simultaneously considers economic, social, and environmental benefits and costs. Notably, previous works have given limited or no consideration to the conflicts and synergies that may emerge considering the wide range of benefits and costs embedded with NBS (Liquete et al., 2016a; Narayan et al., 2017; Raymond et al., 2017a, b; Reguero et al., 2014). Hence, our framework aims not only to address costs and benefits inherent in NBS but also to highlight potential trade-offs and synergies.

The identification of benefits and costs will be the focus of the workshop that is currently planned for May 2024. The workshop will adopt a participatory approach, fostering interaction among participants. It will comprise two phases.

First, we are planning to divide participants into groups based on their roles: (i) private sector (directly and indirectly related enterprises), (ii) educational and scientific community, (iii) policymakers and political authorities, (iv) representatives of civil society and (v) industry associations. This phase aims to identify specific costs and benefits associated with NBS implementation, considering economic, social, and environmental aspects. Participants will also discuss the significance of these costs and benefits in terms of impacts, their interrelationships, and the likelihood of occurrence.

In the second phase of the workshop, we plan to reorganize the groups into focus groups comprising participants from different roles, who will deliberate on the synergies and trade-offs of costs and benefits previously identified. This phase aims to stimulate discussion and idea exchange among participants and assess the level of consensus reached. It is anticipated that during this stage, the above identified costs and benefits will be further characterized, and the interrelationships between them in terms of synergies and trade-offs will be elucidated.

To prepare participants and facilitate discussion, the focus groups will be preceded by a brief introduction to the project's specific content and objectives, the characteristics of NBS, and a preliminary list of costs and benefits traditionally associated with NBS. This list was compiled through analysis of scientific literature on the topic and encompasses various costs and benefits (see Table 2).

Table 2. Benefits and costs of NBS in the economic, social and environmental domains.

	Economic	Social	Environmental	References
Benefits	Reduce public costs (construction and maintenance costs)	Regulating Ecosystem Services (ESS), Provisioning ESS, Cultural ESS, Supporting ESS, Recreation, Accessibility, Human health and well-being, Green jobs	Habitat quality, Habitat quantity, Habitat creation, Biodiversity, Species abundance, Extent of protected area, Carbon sequestration, Biological control, Pollution reduction	(Liquete et al., 2016a; Cohen-Schacham et al., 2016; Raymond et al., 2017; Ruangpan et al., 2024; Viti et al., 2022)
Costs	Construction costs Maintenance costs	Social cohesion		

Results. Despite their prominence on political and research agendas, the understanding of on-the-ground stakeholders regarding Nature-based Solutions remains limited. Our research aims to enhance understanding of how different stakeholder groups perceive the impact of NBS implementation for coastal restoration across economic, social, and environmental domains. We anticipate uncovering prevailing interests among stakeholder categories and providing insights into the general sentiment regarding NBS application and perceived effectiveness across these domains.

The primary anticipated outcome of the research is a framework capable of mapping the costs and benefits associated with NBS implementation against the perceptions of different stakeholder categories, thereby highlighting potential trade-offs and synergies. This framework aims to transcend the traditional approach that analyzes NBS benefits and costs as isolated entities instead undertaking a comprehensive evaluation of their varied and sometimes conflicting impacts. In doing so, we aim to address the gap identified by (Viti et al., 2022), moving from a compartmentalized assessment of costs and benefits to one that optimizes both the recognition and valuation of the multiplicity of impacts arising from nature-inspired strategies.

Another expected outcome is to devise a novel classification of stakeholders based on two criteria: (i) the intensity of NBS impact on them and (ii) the degree of influence they exert. This classification aims to provide a nuanced understanding of stakeholders' roles and perspectives in the context of NBS implementation.

By identifying the costs and benefits of NBS and the perceptions of key stakeholders, the study aims to support policymakers and public managers with insights on what aspects may spur or prevent the social acceptability of specific NBS.

Research Limitations. The primary limitation of this study pertains to its methodology. While adopting a qualitative approach via a single case study is appropriate for delving deeply into the analysis and offering specific insights, this methodology restricts the generalizability of our findings. To enhance generalizability, replication of our study in diverse contexts for comparative analysis would be necessary.

Another limitation lies in the sampling of stakeholders. Despite efforts to ensure representation across various stakeholder categories through triangulation with categories identified in the literature, bias in the identification of costs and benefits may have originated from the selection of participants.

Additionally, this research solely offers a qualitative assessment of benefits and costs. Extending the study to incorporate quantitative measurements of these costs and benefits, while also evaluating the intensity of synergies and trade-offs identified, would be beneficial.

Managerial Implications. The practical implications of this study primarily target public managers and decision-makers. Our framework concerning benefits, costs, synergies, and trade-offs aids in identifying critical areas and potential conflicting objectives for management, as well as opportunities for strengthening synergies. Thus, the study aims to furnish best practices and solutions for minimizing conflicts and maximizing benefits. Moreover, stakeholder analysis can furnish valuable insights for local authorities to: (i) raise awareness and foster a comprehensive

understanding of NBS among diverse local stakeholders, (ii) structure and tailor communication more effectively based on different stakeholder groups, and (iii) pinpoint additional opportunities for stakeholder engagement.

Originality of the Paper. This research makes original contributions to both theoretical and practical domains. Theoretically, it enriches the literature on stakeholder perception analysis related to NBS implementation by exploring the interrelationships between costs and benefits. While previous literature has focused on identifying diverse costs and benefits from stakeholders, limited efforts have been made to capture potential synergies and trade-offs among them. Furthermore, prior studies often categorized stakeholders solely based on their social group affiliations. However, our study advances this by offering holistic insights into stakeholder views, perceptions, awareness, and expectations of NBS in terms of economic, social, and environmental dimensions. We, also, introduce a novel classification of stakeholders considering (i) the intensity of NBS impact on them and (ii) their degree of influence.

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Una ipotesi di formalizzazione markoviana della dinamica delle unità operative nei cambiamenti organizzativi di ENEL S.p.A.

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Abstract

Il presente studio sviluppa una metodologia attraverso la quale valutare la dinamica delle strutture organizzative delle imprese, in particolare se questa dinamica si basa su un processo di Markov. La proposta metodologia è stata applicata al caso ENEL S.p.A. I risultati segnalano che rispetto a due dimensioni di merito, (dimensione e efficienza), solo la prima presenta un carattere sostanzialmente Markoviano. I risultati suggeriscono che l'efficienza delle unità organizzative è fortemente dipendente dal passato e quindi anche più difficilmente modificabile, anche in contesti strategici di rapido cambiamento.

Parole chiave: struttura organizzativa, dinamica evolutiva, processi di Markov, ENEL S.p.A.

Inquadramento della ricerca. Nel campo degli studi sull'economia e gestione delle imprese, gli studiosi hanno cercato di comprendere e prevedere le dinamiche delle strutture organizzative, qualificata dalle sue unità organizzative e relazioni tra le stesse, su cui si fonda l'impresa e il suo processo di produzione di beni e servizi (Baum and Singh, 1994; Golinelli et al., 2002; Komander and König, 2024). In questa prospettiva, alcune indagini sulla dinamica delle organizzazioni hanno enfatizzato l'idea di raccontare una storia, una cronologia di fatti accaduti, e attraverso questi accadimenti cogliere quanto singolarmente le trasformazioni si siano adattate o siano state influenzate dal contesto di riferimento, oppure quale può essere stato il contributo sul livello di efficienza di questa o quella struttura organizzativa, e così via (Hunziker and Blankenagel, 2024). A volte i periodi di vita delle singole fasi organizzative sono troppo brevi per un esame complessivo; in tal caso potrebbe essere più utile considerare una intera sequenza di trasformazioni organizzative abbracciando un arco temporale ampio e descrivere alcune caratteristiche salienti della traiettoria del sistema. Probabilmente è questa anche una condizione per comprendere logiche di fondo e "memoria passata" manifestata nel passaggio da una configurazione organizzativa alla successiva o alle successive. Qui per memoria passata dell'organizzazione è intesa, l'insieme di quei fattori che condizionano, limitano o più in generale ancora guidano il comportamento di una riorganizzazione e cosa trasporta con sé un cambiamento organizzativo (Walsh and Ungson, 2009; Sen et al., 2023). Nel contesto delineato, l'impiego dell'analisi markoviana presenta un approccio nuovo, offrendo un'interessante intersezione tra i processi markoviani e la teoria organizzativa. Fondamentalmente, un processo di Markov è un modello stocastico che prevede la probabilità di transizione da uno stato a un altro basandosi esclusivamente sullo stato attuale, ignorando il percorso che ha portato ad esso. Questo attributo, noto come proprietà di Markov, fornisce un quadro per la modellazione di sistemi dinamici che si evolvono nel tempo. Sebbene i processi di Markov abbiano tradizionalmente trovato applicazioni in campi che vanno dalla fisica all'economia, la loro incursione negli studi organizzativi è relativamente nascente. Il fascino principale dell'analisi markoviana in questo contesto risiede nella sua capacità di modellare l'evoluzione delle strutture organizzative, cogliendo i cambiamenti nei ruoli, nelle responsabilità e nelle interazioni (Castillo et al., 2021). L'importanza della struttura organizzativa non può essere sopravvalutata, poiché essa modella la distribuzione di ruoli, responsabilità e autorità all'interno di un'organizzazione (Caselli, 1966; Costa and Nacamulli, 1998). Vari modelli di strutture organizzative, come gerarchico, piatto o a matrice, influenzano in modo significativo l'efficacia e l'efficienza dell'impresa e quindi i suoi risultati correnti e prospettici. Pertanto, comprendere e prevedere i cambiamenti all'interno di queste strutture è fondamentale per la pianificazione strategica e l'efficienza operativa (Cafferata and Cibir, 2000). Tuttavia, l'applicazione dei processi markoviani alle strutture organizzative non è priva di difficoltà. La raccolta dei dati rappresenta un ostacolo significativo, poiché sono necessarie informazioni dettagliate sulle transizioni interne e sui cambiamenti organizzativi.

Obiettivo del paper. Il presente lavoro intende definire una metodologia atta a verificare se i cambiamenti della struttura organizzativa delle imprese segue o meno una dinamica Markoviana. L'obiettivo è stato calato nel quadro di una primaria impresa industriale, ENEL S.p.A., in un suo momento strategico particolarmente turbolento (fase di

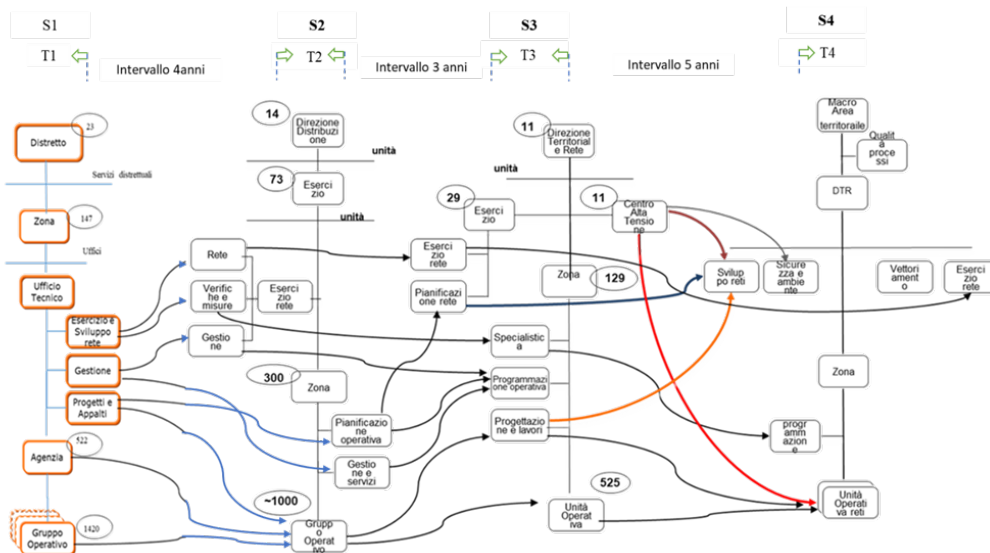
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liberalizzazione del mercato dell'energia e internazionalizzazione del gruppo) che ha richiesto intensi e radicali interventi, anche di diversificazione (Picone and Dagnino, 2016), a più riprese sia a livello di macro-scala del sistema organizzativo nel suo complesso sia incidendo sulle strutture operative territoriali. L'insieme di queste trasformazioni, operate con opportuna sinergia tra strutture centrali e territorio, che hanno riguardato a più riprese l'intera azienda, hanno generato impatti su strutture e persone, generando così un ricco insieme di dati e di informazioni sul quale costruire l'analisi qui proposta.

Metodologia. Un primo approccio per analizzare il processo di evoluzione è stato quello di analizzare, in un'ottica di caso di studio (Yin, 2009), le principali trasformazioni organizzative (geometrie delle strutture, livelli di responsabilità, politiche industriali, dati ecc.) che si sono susseguite con continuità nel periodo di maggiore turbolenza strategica determinando pesanti impatti su strutture e persone coinvolte. L'intero sistema ENEL era sottoposto in quegli anni ad una complessa dinamica sia a livello di macro-scala organizzativa relative agli anni 2003-2005, anche connesse all'acquisizione di società nei primi anni della fase di espansione internazionale di ENEL con ri-allocazione di società o aree di business. Contestualmente anche importanti strutture territoriali erano pienamente interessate. Per maggiore chiarezza espositiva di queste fasi sono stati ricostruiti e qui riportati i seguenti cicli corrispondenti agli anni 1999-2002 e dal 2002 al 2007 caratterizzati da forte turbolenza interna del sistema. La Figura 1 mette in evidenza il complesso intreccio organizzativo delle strutture territoriali di ENEL: le frecce indicano i flussi di comunicazione, le linee continue (verticali e orizzontali) rappresentano i legami gerarchici (linee verticali) o le "parentele" funzionali (orizzontali) tra le strutture. Infine i box corrispondono alle unità organizzative (funzioni, uffici, unità, ecc.).

Fig. 1. Un esempio di dinamica organizzativa che hanno fortemente interessato le strutture territoriali dell'area della distribuzione dell'energia elettrica



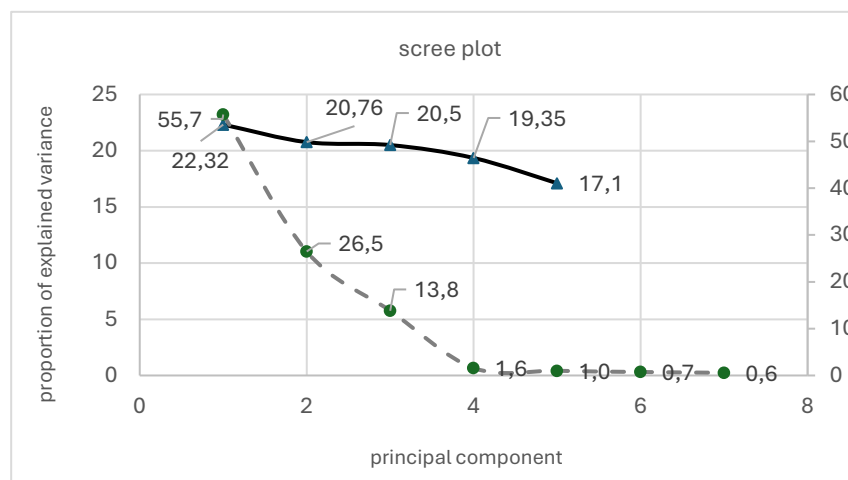
Nella rappresentazione Markoviana della dinamica organizzativa del caso considerato si è proceduto a individuare le unità organizzative comuni a tutti i periodi. Questa scelta è legata alla necessità di garantire che gli stati caratterizzanti l'organizzazione dell'impresa mantenessero una propria consistenza nel tempo. Ciascuna unità organizzativa è a sua volta rappresentabile da una n-upla di variabili strategiche di risultato, quali, per esempio, il numero di addetti, le quantità prodotte, numerosità dei clienti interni ed esterni serviti (Mocciaro Li Destri et al., 2012). La nostra serie è quindi rappresentata da una matrice multivariata che, per essere trattabile, richiede un'operazione di sintesi. Quest'ultima è stata svolta mediante l'analisi in componenti principali (Principal component analysis o PCA). L'idea di fondo è che le singole variabili non sono altro che viste differenti dello stesso sistema, ci si attende, quindi, che i loro valori si muovano in sincronia nel periodo analizzato. In termini statistici, nell'ambito di questo comportamento corrisponde all'emergere di poche componenti principali in cui si raccoglie gran parte dell'informazione presente nel campo di dati. La mutua correlazione tra le variabili fa sì che l'informazione inizialmente dispersa nella n-upla delle variabili iniziali possa essere condensata in poche componenti che spiegano una parte rilevante dell'informazione globale del sistema, cioè una "maggior proporzione di varianza spiegata". Per questa loro caratteristica di massimizzazione della struttura di correlazione, le componenti ortogonali tra loro per costruzione, non sono altro che gli assi di un nuovo riferimento cartesiano (factor plane) e indicano le direzioni dello spazio delle fasi dove il sistema multidimensionale si correla maggiormente. La PCA è intesa pertanto come una rappresentazione relativistica, dove i posizionamenti nello spazio delle componenti dipendono dalla storia e dalle caratteristiche degli stessi dati esaminati. L'analisi fornisce semplicemente una "rilettura" statistica dei dati per una loro migliore comprensione, senza imporre scelte a priori, lasciando che ogni cosa emergesse dai dati in modo naturale. È in sintesi un cambio di prospettiva è quindi un modo per trarre il miglior aiuto nella interpretazione dei dati.

La presenza di aggregazioni notevoli nello spazio delle fasi corrisponde agli stati discreti visitati dal sistema nella sua evoluzione e sono appunto le probabilità (frequenze) di transizioni tra questi stati discreti a generare la matrice di

Markov. Con questo formalismo un sistema dinamico viene descritto attraverso la sua matrice di transizione, che rappresenta le probabilità condizionale del sistema di passare da un certo stato i al tempo t a un altro stato j (essendo ammessa anche l'identità $i=j$) al tempo $t+1$. Pertanto un prerequisito per l'applicazione di questa analisi è la possibilità di descrivere la dinamica mediante stati discreti nonché di suddividere il tempo in passaggi ugualmente discreti. Nell'impostazione qui adottata, gli stati discreti sono rappresentati dai valori (positivi o negativi) dei punteggi assegnati alle diverse unità organizzative considerate nel corso del tempo. A tal fine, i punteggi delle componenti sono espressi da variabili standardizzate a media zero e deviazione standard unitaria. Conseguentemente, la serie storica è stata analizzata in termini di probabilità di transizione a due stati (positivo/negativo) dei valori della serie. Le matrici corrispondono ad un diagramma dello spazio delle fasi avente come righe i valori X_t e come colonne i valori X_{t+1} , mentre i suoi elementi corrispondono a quanto osservato come probabilità condizionate $P(X_{t+1}=j | X_t=j, X_{t-1}=j_{t-1}, \dots, X_0=j_0)$ a passi temporali successivi. Il formalismo della matrice di transizione (o TM) è semplice, perché permette uno sguardo immediato alle caratteristiche fondamentali della dinamica studiata: se la storia precedente del fenomeno studiato non ha alcun effetto sul comportamento reale, allora le colonne della TM corrispondono a una probabilità generale dello stato corrispondente e le righe della TM riproducono semplicemente la distribuzione di probabilità tra gli stati. Questo tipo di comportamento viene definito una passeggiata casuale. Al contrario, se c'è una marcata deviazione da questo comportamento puramente casuale, può essere ipotizzato che esista una qualche forma di memoria del sistema e quindi di una misura di trascinamento di logiche organizzative e gestionali/operative nelle varie fasi analizzate. In altre parole, se le matrici di transizione a uno stadio e a due stadi tendono a produrre processi sostanzialmente equivalenti, allora è possibile concludere che il sistema considerato dipende soltanto dallo stato passato e non dalla storia complessiva considerata. Viceversa, differenze significative tra le due matrici di transizione a uno e a due stadi suggeriscono l'importanza della storia passata.

Risultati. Come osservato nella metodologia, il primo passo dell'analisi è l'applicazione della Principal Component analysis sulla n -upla di dati caratteristici delle singole unità organizzative considerate. Preliminarmente, occorre osservare che un punto importante è quello della differenziazione degli autovalori tra le diverse serie di dati: singoli numeri casuali e struttura organizzativa ENEL (vista al livello operativo). Qui per l'analisi delle due serie di dati è stata semplicemente presa a base la loro singola storia, ed appare subito evidente il diverso comportamento dei due sistemi osservando l'andamento delle curve riportate nel grafico (scree plot).

Fig. 2. Scree plot degli autovalori della serie di numeri casuali (linea nera solida) e di ENEL (linea tratteggiata grigia)



La Figura 2 mette a confronto gli autovalori (eigenvalues) della matrice di correlazione – proporzione di varianza spiegata da ciascuna componente – relativa a due diversi sistemi molto differenti: un sistema completamente stocastico (sequenza dei numeri estratti da una lotteria- punteggiata in triangoli), e il set dati relativi al sistema organizzativo (ENEL)-strutture operative. Assistiamo in questo caso ad una distribuzione degli autovalori (eigenvalues) della matrice di correlazione (proporzione di varianza spiegata) del tutto diversa, tanto da poter individuare nel caso ENEL una serie di fattori da “trattenere” per l’analisi, cercando i valori più grandi fino al punto in cui sono ben distinti e separati dagli autovalori più piccoli, che è possibile trascurare. I dati in Tabella 1 mostrano tra l’altro i valori della varianza spiegata cumulativa (cumulative explained variance) al crescere del numero delle componenti estratte. In particolare le prime tre componenti principali spiegano da sole già il 90% della variabilità totale del sistema organizzativo in studio.

Tab. 1. Autovalori (Eigenvalues) della matrice di correlazione e relativa proporzione di varianza spiegata

Component	Eigenvalue	Proportion	Cumulative
1	5,015	0,557	0,557
2	2,383	0,265	0,822
3	1,243	0,138	0,901
4	0,143	0,0159	0,976
5	0,090	0,0103	0,986
6	0,067	0,0074	0,993
7	0,052	0,00575	0,999
8	0,007	0,00078	1

Come era da attendersi per un sistema complesso organizzato come quello in esame l'analisi può essere focalizzata sulle prime tre componenti principali accettando una piccola dispersione dell'informazione contenuta nel sistema (10% circa) distribuita nelle altre componenti minori, tutte con valori singolarmente trascurabili e tali da poter essere considerate un rumore di fondo della serie dati. Decisa questa fase di analisi è necessario entrare ora in merito alle correlazioni tra le componenti (factor) e le variabili originali riportate nella matrice dei factor loadings (cfr. Tabella 2). Le variabili maggiormente correlate con le componenti forniranno gli elementi necessari per assegnare un significato alle componenti estratte. Questo è un passaggio fondamentale dell'analisi in componenti principali, quello di attribuire un significato (dei concreti legami relazionali) alle componenti estratte, sulla base sul "profilo dei loading", cioè sulle correlazioni tra le variabili originali e le componenti.

Tab. 2. Matrice dei factor loadings: coefficienti di correlazione fra variabili originali e componenti (Factor)

variabili	Factor1	Factor2	Factor3
Clienti	0,882	0,412	0,128
Rete	0,744	0,382	-0,490
Densità (Clienti/Rete)	0,153	0,003	0,976
Addetti totali_unità	0,874	-0,476	0,035
Impiegati	0,801	-0,551	0,066
Operai	0,913	-0,354	-0,006
Clienti /Addetti totali	0,067	0,945	0,158
Clienti /addetti area distribuzione	0,665	0,721	0,046
Addetti unità/Addetti area distribuzione	0,987	-0,010	-0,017

Esaminando meglio i singoli valori della matrice dei factor loadings si nota come la prima componente mostra valori tutti positivi e questo conferma che il sistema presenta un fattore di scala in cui una grandezza influenza tutti gli altri indici. La prima componente (Factor 1) ha un coefficiente di correlazione vicino all'unità (massimo teorico) con le variabili Operai, Impiegati e Addetti totali, correlazioni molto elevate si osservano anche con le variabili Clienti e Rete. L'analisi si riferisce alle unità territoriali ENEL (Zone) ed è facile associare alla prima componente una misura di "Dimensione" delle unità. Il fatto poi che questo fattore sia registrato sia in termini di clienti sia in termini di numero di addetti, ci conforta su una sostanziale "coerenza media" fra dimensione organizzativa ed esigenze del territorio. Questa prima componente esprime quindi una sostanziale "variazione coerente" tra abitanti, clienti e impianti. Coerenza che è più evidente nel profilo dei loading di Factor 1, dove il numero di addetti delle unità è in linea con il numero dei clienti (0,874 vs. 0,882). La seconda componente (Factor 2) invece è molto correlata con due "variabili rapporto": clienti/addetti e clienti/addetti area distribuzione; essa è quindi direttamente rappresentativa dell'efficienza operativa differenziale tra le diverse unità poiché scala con la quantità di 'operazioni' per addetto. In termini fisici chiameremo la prima componente, l'intensità e la seconda la derivata di un campo. La terza componente (Factor 3), infine, è rappresentata dalla "pura" densità della copertura della rete elettrica sul territorio (massima correlazione con la variabile clienti/rete). Questa componente riflette le caratteristiche fisiche del territorio e conseguenti specificità legate alla tipologia di popolamento (aree più o meno rurali, presenza di aree industriali). Dipende insomma dalla morfologia fisica (e quindi dalla densità abitativa) del territorio ed è riconducibile a quello che possiamo chiamare "effetto territorio". Quest'ultima dimensione, data la sua natura esogena, non è stata ulteriormente considerata nell'analisi della dinamica Markoviana della struttura organizzativa di ENEL. Queste nuove dimensioni del sistema, indipendenti l'una dall'altra (per costruzione), forniscono una sorta di "regolarità dal basso". In altre parole, ogni componente equivale ad una struttura di relazione che il sottoinsieme di dati fa emergere come "regolarità", ed in sostanza riassume un concetto autonomo che raccoglie al suo interno uno schema di relazioni particolari (profilo di loading) tra le variabili originali. Il passaggio dalla serie dati alle componenti ha permesso in fondo di confrontarci con un segnale più chiaro rispetto alla serie dati originaria e comunque mantenere collegate le informazioni alla dimensionalità del sistema. Abbiamo pertanto a questo punto la possibilità di caratterizzare la dinamica lungo i factor score delle componenti trattate in termini di un processo markoviano al fine di verificare la possibilità di una caratterizzazione probabilistica della dinamica del sistema. In particolare, rispetto ai due fattori considerati, "Dimensione" e "Efficienza", si è proceduto alla costruzione delle matrici di transizione a 1-passo e a 2-passi. Le matrici sono riportate di seguito nelle Tabelle 3 e 4.

Tab. 3. Matrice di transizione calcolate sull'intero periodo 1997-2007 per il fattore "Dimensione"

1-passo			2-passi			
	>0	<0		>0	<0	
>0	0,180	0,819	>0	>0	0,583	0,417
<0	0,388	0,611	>0	<0	0,581	0,419
			<0	>0	0,311	0,689
			<0	<0	0,038	0,962

Tab. 4. Matrice di transizione calcolate sull'intero periodo 1997-2007 per il fattore "Efficienza"

1-passo			2-passi			
	>0	<0		>0	<0	
>0	0,944	0,055	>0	>0	1	0
<0	0,427	0,572	>0	<0	1	0
			<0	>0	1	0
			<0	<0	0,723	0,277

Sulle matrici di transizioni a 1 e 2-passi è stata poi simulata, in 1000 prove indipendenti, l'evoluzione dei due fattori. Le serie simulate originanti dalle matrici a 1 e 2-passi sono state comparate attraverso il test non parametrico di Kolmogorov-Smirnov (K-S). Da questo test si osserva che rispetto al fattore "Dimensione" le due serie simulate generate dalle matrici di transizione a 1 e 2-passi sono differenti, sebbene con un livello di confidenza del 95% (Combined K-S = .461, $p=0.02$). Rispetto al fattore "Efficienza", le differenze sono assai più marcate e significative (Combined K-S = .1671, $p<.0001$). Dunque, rispetto alla "Dimensione" il processo presenta dei tratti tendenzialmente Markoviani, con la storia recente che è sostanzialmente rilevante. Differentemente per il fattore "Efficienza", in cui la sostanziale differenza dei risultati dell'evoluzione del sistema così come ottenuta nelle matrici a 1 e 2 passi, evidenzia che la storia passata è assai rilevante e condizionante la dinamica futura.

Limiti. Il presente lavoro si basa su un caso di studio, sebbene rilevante, in un periodo di intenso cambiamento, che tuttavia fornisce un laboratorio interessante per cogliere le variazioni organizzative e quindi rappresentarle in un'ottica di processo Markoviano. In aggiunta, la dinamica organizzativa di una impresa è influenzata da condizioni specifiche della tecnologia di produzione così come di fattori istituzionali di contesto. In questo senso, la sostanziale dipendenza dal passato dell'efficienza potrebbe essere il portato di inerzie che traggono origine dal contesto istituzionale di riferimento, così come dalla tecnologia di produzione adottata. In questo senso, studi successivi potrebbero adottare la metodologia proposta a casi diversi operanti in settori e contesti diversi, valutando, così, come fattori specifici a livello di impresa, settore e contesto istituzionale sono in grado di spiegare la Markovianità o meno di determinati processi a livello di struttura organizzativa di una impresa.

Implicazioni manageriali. Le organizzazioni sono fatte di persone e dalle persone, e sono proprio loro a mantenere sia la memoria delle trasformazioni che ad attuare il cambiamento stesso una volta che ne abbiano assimilato e fatta propria la necessità. Il lavoro proposto e l'approccio Markoviano delle dinamiche organizzative delle unità territoriali di una importante area di responsabilità di ENEL (area della distribuzione) e che copre un decennio di grandi cambiamenti vuole essere principalmente un tributo alle tante persone (circa 40000 persone coinvolte a più riprese) che con tutte le loro speranze e aspirazioni, ma anche preoccupazioni, ebbero la forza di mettersi in gioco (con cambi di responsabilità, luogo di lavoro). Un elemento iniziale da richiamare riguarda la differenza tra il fattore Dimensione (Factor 1) dove è più "facile" indirizzare strategie e comportamenti con cambiamenti di percorso anche abbastanza repentini, (maggiore possibilità di agire sulla leva dimensionale delle unità organizzative), mentre per quanto riguarda i complessi e "sensibili" meccanismi di gestione legati all'efficienza operativa (Factor 2), strettamente connessa alla risorsa "Personale", il sistema mostra maggiore resilienza e quindi minori "gradi di libertà". Questa minore plasticità della variabile "Personale" crediamo sia da leggere anche nella salutare presenza di garanzie per i lavoratori occupati.

Originalità del paper. Il presente lavoro introduce una metodologia per indagare il carattere Markoviano dei processi di evoluzione della struttura organizzativa di una impresa in presenza di cambiamenti strategici. Questa metodologia non è limitata al caso di studio considerato, bensì può essere estesa ed applicabile a casi diversi. Il nostro contributo offre anche evidenze empiriche sulla dinamica delle organizzazioni, evidenziando come la storia passata influenza questa dinamica in modo differente in funzione del parametro di misura considerato.

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Empowering women workforce in steel production: A case study on implementing Diversity, Equity and Inclusion (DEI) initiatives

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Abstract

The steel industry is facing numerous challenges. The most well-known are related to environmental sustainability, but fewer know how social challenges are growing in importance, especially those related to Diversity, Equity and Inclusion (DEI). The pursuit of new skills and competencies, along with the establishment of a more equitable environment, even in traditionally male-dominated sectors like the steel industry, aims to foster a more sustainable economic system. A path on DEI can become a strategic business lever, especially if we think about opening new job market opportunities by experimenting with women's empowerment in production. To understand the importance of DEI initiatives, we present and analyze the case study of SpectrumSteel Industries⁶, a leader in the European steel market. The introduction of DEI initiatives in SpectrumSteel Industries is still ongoing. Still, results highlight that women's competencies can bring positive impetus to a historically male-dominated sector, also enhancing the importance of more automated processes and machines, underscoring benefits for the whole population.

Key words: Steel industry; Diversity, Equity and Inclusion initiatives; Women in production; Case study

Framing of the research. *The steel industry represents an essential industrial and economic sector, embracing a range of products which are indispensable every day (World Steel Association a 2023). The steel industry is the backbone of the European economy (Eurofer 2022). The European Union (EU) was established as a result of the pivotal role played by steel. In 1951, the founding states of the EU signed the treaty of the European Coal and Steel Community, which aimed to collectively manage the coal and steel industries. The European steel industry is guiding the world through its commitment in technological and digital innovation and environmental sustainability (Eurofer 2023). The EU steel sector employs about 306,000 highly-skilled people and has a turnover of around €130 billion, with an average yearly production of 152 million tons of steel per year and more than 500 steel production sites (Eurofer 2023). Germany and Italy are among the first twenty top world producers (World Steel Association b 2023). Specifically, in 2022 Italy maintained its 11th position among the world top producers, with 21.6 million tons (16% of the world production) (Federacciai 2022).*

The steel industry is recognized to be a male-dominated industry, where the definition of male-dominated refers to the lack of presence of women at all levels of the organization, from managers to employees (Australian Human Rights Commission, 2013; Salminen-Karlsson 2020). Increasing the number of women in the steel industry is not only an issue about the abolition of gender segregations, and reaching the Agenda 2030 goals, but also an opportunity to attract different skills and competencies (Torre 2017; Salminen-Karlsson 2020). Unfortunately, introducing women in a male-dominated industry is not simple as hiring other worker categories. Women often represent the minority and this may have negative consequences such as exclusion dynamics, greater stress, discomfort, and isolation (Salminen-Karlsson 2020; Torre 2017).

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⁶ SpectrumSteel Industries is a fictitious name used to maintain anonymity.

Group dynamics are primarily influenced by the size and composition of the group. In such dynamics, the minority individuals often find themselves isolated or compelled to conform to the majority's behavior (e.g. Kanter in 1977, Tanford and Penrod 1984; Mathisen et al. 2013). Moreover, people in the minority group are often seen as tokens (Kanter 1977, Torre 2017; Salminen-Karlsson 2020). The concept of token was introduced for the first time by Kanter (1977): when a minority is introduced in a homogeneous group, it is perceived only through the “diverse” character. When diversity is given by gender, women are identified only by their sex, men emphasize this difference, and gender stereotypes are exacerbated (Konrad et al. 2008). All these mechanisms enhance women's pressure and their perception of being “controlled” (Kanter, 1977; Torchia et al., 2011; Holgersson and Romani 2020). In addition to the underrepresentation of women, the presence of masculine norms in an organization is another important mechanism that exacerbates the tokenism faced by women (Holgersson and Romani 2020; Salminen-Karlsson 2020). Masculine norms are the processes by which men's experiences, point of view and subjectivity become universalized and accepted as a common way of life (Lewis and Simpson 2012). Moreover, masculine norms contribute to maintaining hidden male-privilege and identifying the minority group as a threat that can challenge this situation of privilege (Lewis and Simpson 2012). This leads to the possibility that the majority group (i.e., men) do not accept the minority group (i.e., women) and obstacles it, making it invisible (Salminen-Karlsson 2020).

In this unbalanced situation, organizations have a decisive role. The cultural orientation of organizations can greatly influence women's work experience and encourage them to enter and remain in male-dominated industries (Harman and Sealy 2017). This cultural orientation encompasses various factors that can enhance the inclusion of women such as management style (e.g., equity, informality, flexibility), language and communication, and gender awareness (e.g., recruitment, ambassadors), background attributes (e.g. location, ownership and workplace organization) (Rutherford 2001; Holgersson and Romani 2020). Implementing these types of measures can interrupt the perpetuation of masculine norms, expose these norms, and openly challenge them, suggesting that the organization perpetuates a gender equity narrative (Holgersson and Romani 2020). Although at the beginning the majority group (i.e., men) may not agree with these actions, this orientation perpetuated from the management team (reflected also in operational actions) becomes a reference point for employees' behaviors (Holgersson and Romani 2020). This sort of normative control forces employees to internalize gender equality culture, promoting a comfortable environment for both men and women (Holgersson and Romani 2020).

To effectively promote Diversity, Equity, and Inclusion (DEI) within the organization, it is crucial to develop a comprehensive strategy that focuses on increasing the representation of women in the workforce. Several workplace initiatives and mechanisms can be introduced in particular in four areas: attraction, recruitment, retention, and development (Australian Human Rights Commission 2013). Specifically :

- Attraction strategies aim to remove the negative perception that women may have about male-dominated industries and, more generally, men and society have about women's presence in these industries. Their purpose is also to promote the benefits of working in these industries and the existing career prospects;
- Recruitment strategies are designed to verify if the existing interview and selection process is already inclusive or if it needs to be changed in this direction. Another objective is to expand the range of skills that potential candidates, especially women, are expected to possess;
- Retention strategies aim to change firm's culture towards DEI and to maintain it during the employment and career development;
- Finally, development strategies are put into action to establish a promotion system that is both transparent and inclusive. This system aims to provide women with the opportunity to participate in the necessary training and development programs in order to progress in their careers within the company.

Within these four areas, several initiatives can be designed and implemented. Their identification and success strongly depends on the objectives and characteristics of the steel mill.

Purpose of the paper. This paper aims to describe and analyze how SpectrumSteel Industries⁷, a steel mill operating in Northern Italy, has introduced DEI initiatives and what are the initial results obtained.

The origins of SpectrumSteel Industries can be traced back to a long-standing steel tradition, spearheaded by a woman who was the mother of the company's founder. She played a significant role in managing the family forge during the 1940s. In the Fifties, the founder took over the family forge. Later, SpectrumSteel Industries expanded until the first new steel complex was created, comprising two steel plants and two rolling-mills running in two different sites not far away from each other. From the Eighties, SpectrumSteel Industries focused its development into four streams: internationalization with the acquisition of production sites in Europe, verticalization to integrate the entire production cycle, and diversification by enlarging the core business of standard construction steel into special steel, and sustainability with a particular attention to environmental protection and work quality improvement. Today, SpectrumSteel Industries has a production capacity of more than 2 million tons of steel per year, by employing more than 1,500 employees in Europe and registering more than 2 billion euro of turnover (SpectrumSteel Industries 2023).

SpectrumSteel Industries operates in Northern Italy, which has a long tradition in steel production (Fondazione Biblioteca Archivio Luigi Micheletti n.d.). SpectrumSteel Industries is based in a province with a long tradition in steelmaking. This province is currently leading the steel industry in Italy (Fondazione Biblioteca Archivio Luigi Micheletti n.d.). In 2011, the women employment rate in this province was 40.1% compared to 56.9% of the men workforce (Istat

⁷ SpectrumSteel Industries is a fictitious name used to maintain anonymity.

2011). In Italy, the employment rate of women aged 20-64 years old was 55% at the end of 2022, under the EU average of 69.3% (Eurostat). The Italian average of women employment is one of the lowest among EU states (Eurostat 2022).

The Italian steel industry employed 30.4 thousand employees in 2020 and was the second largest steel market in the European Union (Federacciai 2021). This sector has a great potential of opening its labor market to women workforce: 92% of the workforce consists of men, while women account for only 8% (Federacciai 2021). This gender composition is a result of the cultural heritage of the sector, well-known as a male dominated sector, despite its technological development in the field of a more automated and safer workplace (Federacciai 2021). Nevertheless, during the 2018-2020 period, women employment increased by 1.9%, while men employment decreased by 1.8% (Federacciai 2021), revealing how the engagement in such a diversity topic could have great economic potential for such a sector. Recent research discussions are focused on how Industry 4.0, in particular automation, can be potential enablers of equal work in terms of gender (Metha et al. 2021).

The description of the context in which SpectrumSteel Industries is active underscores how the introduction of DEI initiatives has taken place within an industry of significant employment importance. However, SpectrumSteel Industries operates in an industry where the women workforce comprises less than 10%, and even less if we consider data on primary steel route (i.e. core production, such as still mill and rolling mill) (Istat 2021). The context in which SpectrumSteel Industries operates makes this case study particularly intriguing, as the firm has had to confront two types of resistance in promoting women's employment in production: one stemming from the industry itself and the other from the broader operating context.

Based on this premise, this case study aims to answer this research question: How can a DEI policy be effectively implemented within a firm operating in a male-dominated industry, starting from management awareness (on topics like attraction, recruitment, retention and development) and extending to the implementation of DEI initiatives?

Methodology. The methodology adopted for this case study is described with regard to data collection and data analysis.

Data collection. Three data sources were used to gather relevant information. Data collection began with archival data such as non-financial disclosure, website, and generalist and specialized press (Vaara and Lamberg 2016). These sources were extremely useful to familiarize with the setting as they describe SpectrumSteel Industries, its production activities, and its DEI initiatives.

We also conducted 11 semi-structured interviews with firm owners, top managers, and middle managers. We selected this interview format because it allows for an unrestricted and thorough expression of viewpoints, facilitating the gathering of diverse insights regarding the decision-making process that prompted SpectrumSteel Industries to embark on DEI initiatives (Rowley 2012). We interviewed people in different hierarchical positions and with different functional roles to explore their different points of views and to collect insights about the strategic, managerial, and operating issues (i.e. attraction, recruitment, retention, development) regarding the introduction of DEI initiatives (Bryman and Bell 2015).

Before the interviews, we met the interviewees several times to establish a trusting relationship (Mellon 1990). Relying on previous studies, we developed an interview guideline to cover all pertinent topics, which was shared with the interviewees before conducting the interview.

During the interviews, we implemented a courtroom-style procedure and ensured that at least one of the authors was present with the aim of mitigating subjectivity (Bingham and Eisenhardt 2011). We also tried to collect detailed information by posing additional questions or asking for clarification if necessary.

Particular attention was paid to achieving convergence through data saturation (i.e., to achieve a point where further data collection is unnecessary as no additional information is being found) (Glaser and Strauss 1967; Saunders et al. 2017).

Concurrently with the collection of archival data and the interviews, we visited the plant several times to directly observe the fieldwork (Corbetta 2003). This deepened our understanding of the context as we observed the behavior and reactions of top and middle managers and employees during the process of introducing DEI initiatives.

The integration of several types of data (i.e., archival data, interviews, and direct observation) is considered essential to understand management phenomena (Argyres et al. 2020). Moreover, this integration enabled data triangulation, i.e., comparisons between information obtained from different sources (Lee et al. 1999).

Data collection lasted more than one year. The collection of longitudinal qualitative data enabled us to develop a process model (Glaser and Strauss 1967; Langley et al. 2013) describing the entire process.

Data analysis. To mitigate interpretation biases, only a subset of the authors utilized the transcribed notes to reconstruct the process of introduction of DEI initiatives and the behavior and reactions of firm owners, top managers, and middle managers (Corbin and Strauss 2015).

Results. SpectrumSteel Industries started its DEI path with the Code of Ethics in 2018, establishing that discrimination is not accepted within the firm. In 2020, SpectrumSteel Industries subscribed to the Charta for gender equity and no discrimination in the workplace. This Charta is a declaration of intent, voluntarily signed by firms of all sizes, for the dissemination of a corporate culture and inclusive policies, free of discrimination and prejudice, capable of valuing talent in all its diversity. In 2021, SpectrumSteel Industries created a DEI policy to promote an inclusive leadership, gender equity in the workplace, a global culture in firm plants, and firm's responsibility towards its internal and external community. In 2022, the firm introduced a Sustainability Committee to pursue ESG scorecards supporting

the industrial plan of the Group, with DEI values playing an important role. In 2023, the Diversity, Equity, Inclusion and Welfare division was created with the goal to gradually implement a DEI strategy and collect all current projects under the main categories of the policy.

SpectrumSteel Industries views the enhancement of diversity, equity, and inclusion (DEI) as a crucial component of its ESG (Environmental, Social, and Governance) strategy. This strategic focus aligns with the company's history, purpose, and vision to foster growth and cultivate positive relationships with employees and external stakeholders, such as suppliers, customers, and local communities. By prioritizing DEI, SpectrumSteel Industries aims to create new opportunities for market expansion and the recruitment of talented individuals.

In the following paragraphs, we present the results in the efforts of SpectrumSteel Industries to create an equal working environment, by considering the whole employee lifecycle (attraction recruitment, retention, development), and especially starting by the experience of female workforce in the primary steel route. We also report some extracts of semi-structured interviews, which were processed by integrating archival data and direct observation⁸.

Within the next 4 years, SpectrumSteel Industries aims to register a level of women occupation that is ten times the mean value in the steel industry in the primary route. To reach this goal, SpectrumSteel Industries is implementing several initiatives to orient the organizational culture towards DEI and increase women's presence in the workforce.

“For me, gender equity is breaking down an open door. I believe you can find greater efficiency with people of different genders at the workplace” (Interviewee B - Director - Production)

“Women in production means for the steel sector enhancing its business continuity, to guarantee a future for the next generations of our sector. I have to open my context to other people, not only men... This means a cultural change” (Interviewee E - Director - Sales).

Since the beginning, SpectrumSteel Industries has been aware of the challenges implied in this cultural process, including the long journey required and the eventual difficulties to be faced in order for the change to be accepted.

AN ORGANIZATIONAL CULTURAL PATH TOWARDS DEI THROUGH FEMALE WORKFORCE EMPOWERMENT.

In order to disseminate the DEI values throughout the company, SpectrumSteel Industries established a team of DEI ambassadors who represent all subsidiaries of the Group. Its task is to identify the opportunities and challenges regarding DEI topics. Specifically, this group should recognize the value of diversity and share experience in the organization, actively promoting and upholding DEI principles within the firm and in the future with stakeholders in the value chain (from suppliers to customers), propose shared and constructive solutions to make corporate governance increasingly inclusive, actively contribute to internal communication of DEI issues, and communicate business issues in an inclusive manner.

In addition to the establishment of this group of DEI ambassadors, other initiatives have been undertaken to orient the organizational culture towards DEI. A four-year training program on DEI topics has been introduced for the entire workforce, from firm executives to blue-collar workers. International experts on DEI issues have been engaged, and an innovative coaching methodology has been employed, starting from individual resources on inclusion already present in everyone (a so-called “inclusion x-factor”⁹). Managers and executives benefited from a supplementary and more specialized training program to ignite the change towards DEI.

Although women were already employed as crane drivers and quality laboratory technicians in some subsidiaries, the parent firm still had a significantly low representation of women. SpectrumSteel Industries therefore decided to design, together with a qualified partner, a program aimed at introducing women in production starting from the parent firm. The big challenge in this program is to specifically introduce women in the primary steel route, completely male-dominated. The program began in 2023 and is still in development. To date, some positive results have already been recorded and some women workers have been employed in production. Consequently, the parent firm decided to make a further implementation in other subsidiaries. Specifically, to increase women's presence in production in the primary steel route, SpectrumSteel Industries designed some initiatives in four areas, accompanied by a consultancy firm specialized on DEI issues: attraction, recruitment, retention, and development. We specify that SpectrumSteel Industries is planning a technological shift to reach decarbonization goals, with a massive investment plan in different strategic sites, thus needing to open to new competences and job market opportunities, like targeting women and people with different ethnicities.

ATTRACTION. Among attraction strategies, SpectrumSteel Industries started with an analysis of jobs in primary steel route from different perspectives. This analysis was performed by an internal task force composed of different functions with the aim of assuring job positions for women also according to normative, security and health conditions.

With the goal to be successful in such a new project of empowerment of female workforce in the heart of steel production, SpectrumSteel Industries collaborated with a reputable partner to showcase employment prospects. It also implemented proactive actions such as a LinkedIn campaign and Open Days to change firm image and appeal to women candidates and in this way, it successfully attracted over hundreds of women candidates.

⁸ Extracts from interviews: A, B, D (Directors of production), C (Energy manager), E (Sales Director), F (General Manager).

⁹ The inclusion x-factor is meant to be the inner and natural resource and attitude of integration possessed by anyone of us.

“Today's steelmaking is different: safer, digital and more inclusive than in the past. And not only to women. Talent and merit know no gender.” (Interviewee F - General Manager)

RECRUITMENT. Recruitment strategies are designed to assure that the selection process is inclusive and to broaden the skills required of women potential candidates. In this regard, the Human resources department of SpectrumSteel Industries is thinking about improving women recruitment not only in primary steel route production, but also through the recruitment of young women as technicians and engineers.

“If we want more women in production, we have to modify our recruitment process and to make some internal organizational changes. We see women are now attracted by jobs once were of men. For example crane drivers, from an operative and mentality point of view, women can be more efficient than men.” (Interviewee D - Director - Production)

Furthermore, a new project together with a network of other partners has been launched to create a model of recruiting and retaining individuals from vulnerable or disadvantaged backgrounds, aiming to provide opportunities for those often overlooked in traditional hiring processes.

RETENTION. Retention strategies aim to change organizational culture towards DEI. The group of ambassadors has the main objective of orienting the organizational culture towards DEI, contributing with initiatives and suggestions to the future design of a more structured firm's DEI strategy. This group has organized sensitization campaigns to raise awareness against gender-based violence and the “Friday of Inclusion”, a monthly newsletter aimed at raising awareness of DEI topics with the help of well-known movies. Moreover, after the periodical internal climate survey, some measures in hourly flexibility (i.e., part-time and home working) were made available by the organization for newly become parents. Lastly, several women-friendly initiatives have been introduced, including the modifications to the toilets and changing rooms to make them more comfortable for women, parking lots near the exits reserved for women, and free medical screenings (e.g., breast cancer control).

Concerning the project of female empowerment in primary steel route jobs, several were the moments of focus groups and coaching sessions both for male and female colleagues, in order to accompany the process of cultural change in a historically dominated male world.

“Women have different perspectives and competences who can enrich the organization. I believe in the future we will see a woman as shift leader “ (Interviewee A - Director - Production).

“As a manager, you need to exploit the differences of competences in your employees, also due to gender differences, to have a successful working environment. For years, I have chosen only women employees because they are more efficient. In our company, there are countless positions that can benefit from women's presence, in processes, for example, quality control.” (Interviewee B - Director - Production).

DEVELOPMENT. Lastly, development strategies aim to design a transparent and inclusive promotion system. At the very beginning of the working experience, a training program on steel production is offered to groups of new workers, to acquire all the relevant information and competences about steel making. In the specific case of female workforce in the primary steel route, an individual coaching was offered periodically to women in order to make them aware of challenges and potentials of the steel environment and obtain more chances of integration within the organization. Moreover, at SpectrumSteel Industries some strategic positions in technical and economic departments are held by women.

“Women do not have first to make limitations on themselves at the workplace, on their career. As a woman, I do not give such a great importance to gender differences.” (Interviewee C - Manager - Energy)

Women candidates were actively involved in succession planning paths.

The efforts of SpectrumSteel Industries in its DEI initiatives, especially looking at the empowerment of women workforce in production, may have a great impact not only on the firm's desire to become a more attractive employer for the province, but also on the possibility to open new opportunities in the recruitment and in the job market.

Research limitations. The introduction of DEI initiatives at SpectrumSteel Industries is still in its early stages. Many phases of the project have yet to be implemented. Therefore, it is not possible to make a final assessment of the results, but rather only an interim assessment focused on the initial stages. SpectrumSteel Industries estimates that the final evaluation can only be made in the medium term, in 3/4 years.

Another limitation of this case study is that interviews were especially conducted with the firm owners, top management, and middle management. For a comprehensive evaluation of the effectiveness of DEI initiatives and any improvements to be made, it is essential to gather the opinions of those directly involved, namely women employees. Additionally, it would be intriguing to assess the reactions of male employees towards these initiatives.

Managerial implications. *The analysis of SpectrumSteel Industries's experience in introducing DEI initiatives has several managerial implications. Primarily, it allows us to discern the most effective endeavors and those that have demonstrated negative outcomes, recognize the potential obstacles that may arise during their implementation and strategies to overcome them, and comprehend the workforce's responses to these endeavors. Second, the achievements of SpectrumSteel Industries can serve as encouragement for other steel mills and firms in other male-dominated sectors (e.g., cement, construction, chemical, oil and gas industries) to introduce DEI initiatives aimed at promoting women's presence within the firm. This successful case could serve as a significant catalyst in institutional settings where additional endeavors are required to attain the inclusion of women in traditionally male-dominated environments and positions. Third, this case study could serve as a model for firms looking to undertake DEI initiatives.*

Originality of the paper. *SpectrumSteel Industries represents a highly valuable case study to be analyzed and evaluated. SpectrumSteel Industries is the pioneering steel mill in Italy to implement DEI initiatives in the steel industry, specifically aimed at promoting women's participation in production. Despite facing resistance from both the male-dominated industry and the broader operating context, SpectrumSteel Industries introduced these initiatives. The industry has a low percentage of women employment, while the overall employment rate for women is significantly lower compared to men. These initiatives were introduced despite SpectrumSteel Industries facing two types of resistance: one stemming from the industry itself, which is a male-dominated industry with a low percentage of women employment; one stemming from the broader operating context, characterized by a substantially lower women employment rate compared to that of men.*

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La trasformazione organizzativa di Autostrade per l'Italia: verso la strategic agility nell'era delle policrisi

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Abstract

Il caso studia la trasformazione organizzativa di Autostrade per l'Italia (ASPI), azienda leader a livello europeo nella costruzione di autostrade e servizi di mobilità. L'analisi individua i fondamenti del contesto meso, micro e macro che hanno attivato la trasformazione dell'organizzazione in chiave agile. Vengono approfonditi gli aspetti rilevanti della trasformazione, e che hanno permesso al Gruppo di costruire nuovi equilibri per assicurare continuità nella creazione di valore sostenibile condiviso, anche nella discontinuità generata da shock esterni ed interni. Il caso mira a favorire la comprensione dei fattori che presiedono alla creazione della agility e intende fornire ai manager e agli studenti una guida alla comprensione dei processi di cambiamento in contesti dinamici guidati da tensioni paradossali.

Keyword: *agility, paradoxical tensions, strategic change, trasformazione organizzativa*

Tipologia: Caso

Il contesto e gli obiettivi di apprendimento

Le organizzazioni si trovano oggi a rispondere a condizioni di mercato in rapido cambiamento, che sono guidate dai mega-trend del green e del digitale; si tratta di fenomeni in grado di accelerare i processi di trasformazione interna (Uhrenholt et al., 2022) e che agiscono simultaneamente come "transizioni gemelle" (commissione Europea, 2021). Le innovazioni tecnologiche disruptive alterano le strutture di mercato esistenti, influenzano i paradigmi tecnologici e di business e generano cambiamenti profondi nelle strutture organizzative e nelle dinamiche di mercato (Christensen, 1997; Schuelke-Leech, 2018). Si inseriscono in questo contesto anche le sfide legate alle policrisi globali come la pandemia da COVID-19, l'instabilità geopolitica, le dinamiche inflazionistiche, e che sono suscettibili di riconfigurare le catene globali del valore (Marvasi, 2023).

Nel tentativo di innovare e navigare il cambiamento, le organizzazioni affrontano paradossi organizzativi, ovvero tensioni tra forze opposte ma tra loro interdipendenti (Lewis et al., 2014; Dieste et al., 2022). La gestione di queste tensioni richiede una nuova vision, con il superamento degli approcci tradizionali basati sul controllo, per abbracciare modelli più dinamici nei processi decisionali (Smith and Lewis, 2011; Handy, 1994), verso la creazione di strutture flessibili e disegnate secondo logiche agile.

La strategic agility rappresenta la capacità che acquisiscono le organizzazioni di monitorare i cambiamenti e adattarsi dinamicamente ad essi ridefinendo i propri obiettivi in base alle variabili contestuali e ambientali (Morton et al., 2018). L'agilità strategica è diventata sempre più rilevante per le organizzazioni in risposta ai rapidi cambiamenti che si verificano nei mercati e nei business (Girod et al., 2023). Le imprese che riescono ad integrare l'agility nei propri processi decisionali mostrano livelli di operational performance superiori rispetto alle organizzazioni che si muovono secondo i modelli organizzativi tradizionali (McKinsey, 2021). Abbracciare l'agility diviene quindi un elemento chiave per le imprese per accrescere la capacità di mantenere un vantaggio competitivo in contesti dominati della velocità del cambiamento e dall'incertezza.

L'obiettivo del lavoro è quello di presentare il processo di trasformazione di Autostrade per l'Italia verso l'agility in un contesto governato da molteplici tensioni esterne ed interne, al fine di delineare il percorso attraverso il quale le organizzazioni possono raggiungere modelli organizzativi più flessibili e dinamici.

Obiettivi di apprendimento:

- *Comprendere i driver del cambiamento esterni ed interni, a livello micro, meso e macro, che possono condurre le imprese ad attivare percorsi di cambiamento verso l'adozione di modelli organizzativi orientati alla strategic agility;*

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- *Comprendere i building blocks che occorre tenere in considerazione nel processo di trasformazione organizzativa verso la strategic agility;*
- *Riflettere sul valore della crisi come motore di trasformazione delle organizzazioni;*
- *Apprendere i processi attraverso i quali le organizzazioni acquisiscono capacità dinamiche.*

Il caso: Autostrade per l'Italia

1. Autostrade per l'Italia: la storia

La storia aziendale di Autostrade per l'Italia (ASPI) si snoda attraverso quasi sette decenni – dal 1950 a oggi – che ripercorrono anni di cambiamento significativo non solo per il Gruppo, ma anche per l'economia, l'industria e le infrastrutture dell'Italia. Negli ultimi settant'anni, infatti, ASPI ha accompagnato l'Italia nei cambiamenti guidati dalle trasformazioni economiche, politiche e sociali, mantenendo la sua posizione di leader nazionale nella gestione integrata delle infrastrutture.

Oggi ASPI è un player di eccellenza, attore di cambiamento e leader nell'offerta di servizi innovativi e infrastrutture, che gestisce 2858 Km di rete autostradale, circa il 50% dell'intera rete nazionale a pedaggio, distribuita in più di 15 regioni. Il gruppo, che ha conseguito ricavi operativi pari a 4.175 milioni di euro nel 2022, negli ultimi anni ha orientato i propri sforzi al miglioramento e all'espansione della rete, con un investimento totale di circa 21 miliardi di euro tra il 2020 e il 2038, per potenziare e ammodernare l'infrastruttura del Paese.

La leadership nel cambiamento è parte integrante del DNA del Gruppo. La storia di Autostrade è infatti sempre stata caratterizzata da un approccio pionieristico all'innovazione, e ha una profonda connessione con la storia ingegneristica del Paese, per il ruolo fondamentale svolto nell'evoluzione delle infrastrutture nazionali e il contributo allo sviluppo economico dell'Italia. La sua leadership ingegneristica si estende anche a progetti internazionali di innovazione autostradale, che hanno funzionato da leva per acquisire competenze avanzate e trasferire conoscenze ai progetti nazionali. Questo ha contribuito al potenziamento delle capacità tecniche e all'integrazione di soluzioni innovative, attingendo dalle migliori pratiche globali. L'eccellenza operativa di Autostrade è quindi il risultato di anni di esperienza e successi ingegneristici, che le hanno consentito di consolidare la sua posizione di guida nell'innovazione e di affermarsi come una delle principali imprese nel panorama infrastrutturale italiano.

2. Il contesto

2.1 Macro-scenario: il mercato della mobilità

L'industria della mobilità attraversa oggi un processo di profonda trasformazione. Le conseguenze a lungo termine della pandemia da COVID-19 unitamente alle twin transition del green e del digitale, stanno agendo come amplificatori del cambiamento ridefinendo non soltanto le abitudini e i comportamenti degli individui legati alla mobilità, ma anche i modelli di business prevalenti nel settore. È in questo contesto che emergono quattro driver del cambiamento della mobility industry.

*La **sicurezza stradale** è stata individuata tra le dieci aree di intervento della Commissione Europea nel 2020 all'interno della Strategia per la Mobilità Sostenibile e Intelligente con l'obiettivo "Vision Zero" che identifica come aree cruciali per lo sviluppo futuro della sicurezza stradale le infrastrutture sicure, i veicoli sicuri, la riduzione delle infrazioni e un intervento post-incidente tempestivo ed efficace. Per l'Italia la sicurezza stradale è ancora una sfida rilevante e strettamente legata alla crescente vulnerabilità del territorio italiano e all'obsolescenza delle infrastrutture di mobilità.*

*Segue il **digitale**, con la crescita del mercato degli Intelligent Transport Systems (ITS), che comprende servizi di gestione delle flotte e del trasporto pubblico, che accelera la trasformazione del settore. Per il 2022, si prevede un incremento globale degli investimenti nelle soluzioni digitali del 12% annuo che potranno raggiungere i \$50.23 miliardi nel 2027. In questo contesto, la realizzazione delle Smart Roads, basata su tecnologie come l'Internet of Things (IoT) e l'Intelligenza Artificiale (IA), assume un ruolo centrale, coinvolgendo infrastrutture stradali, ferroviarie e aeroportuali contribuendo a creare una mobilità intesa come ecosistema digitale.*

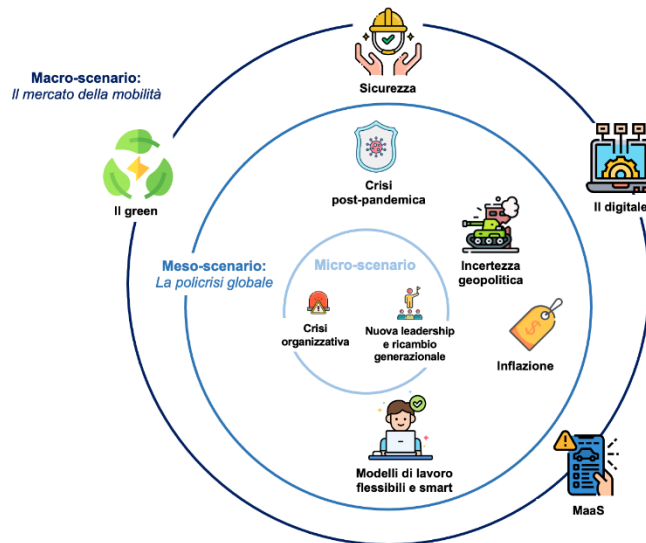
*Anche la **sostenibilità** assume particolare rilevanza per il futuro del settore della mobilità. Mentre nel 2022 il car-sharing ha registrato in Italia un aumento del 41%, con oltre 49 milioni di viaggi e un fatturato di 178 milioni di euro, le immatricolazioni full electric rappresentano meno del 4% del parco circolante, con circa 200.000 unità al 30 giugno 2023. Crescono gli impatti economici derivanti dai danni alle infrastrutture veicolari dovuti ai cambiamenti climatici, che potranno raggiungere i 5,17 miliardi di euro all'anno entro il 2050.*

*A livello europeo, il paradigma della **Mobility-as-a-Service (MaaS)** propone inoltre una mobilità più efficiente e sostenibile con l'ottimizzazione della relazione pubblico-privato, attraverso un accesso semplificato a opzioni di mobilità diverse e un focus sulle soluzioni sostenibili come lo sharing. Questo paradigma rappresenta un driver chiave nella trasformazione digitale della mobilità, incoraggiando la collaborazione tra enti pubblici e privati attraverso piattaforme digitali di intermediazione per diversificare l'offerta MaaS.*

2.2 Meso-scenario: l'interconnessione dei sistemi globali e la policrisi

Il cambiamento a livello meso richiama il concetto di policrisi, che indica l'interazione di diverse crisi provenienti da sistemi vari che, interagendo tra loro amplificano i loro effetti (Lawrence et al., 2022). La crescente interconnessione tra mercati e sistemi globali ha infatti aumentato i rischi sistemici per le organizzazioni, anche per quelle che operano nel settore della mobilità. Attualmente, i principali nodi delle poli-crisi globali sono le conseguenze a lungo termine della pandemia da COVID-19, le crisi geopolitiche e le tensioni inflazionistiche che hanno portato ad un ripensamento della mobilità in chiave sostenibile. Le sfide create da questi nodi problematici influenzano gli attori del mercato della mobilità nella gestione delle persone, nei modelli di lavoro e nelle aspettative individuali, spingendo le aziende del settore a modificare le proprie strutture in chiave collaborativa, per favorire il benessere e la crescita personale dei dipendenti.

Figura 1. I driver del cambiamento

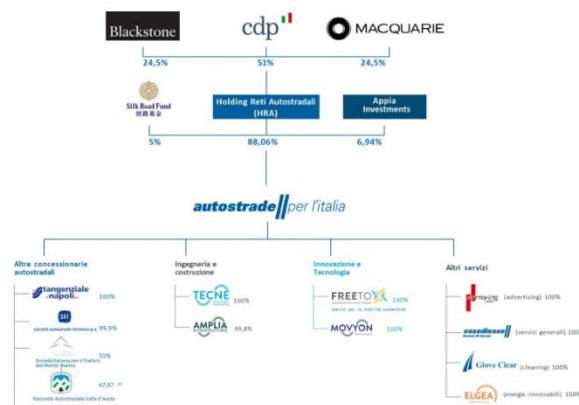


2.3 Micro-scenario: elementi di discontinuità interni

ASPI si è confrontata con shock interni rilevanti. Il primo è il crollo del viadotto Polcevera (Ponte Morandi), avvenuto nell'agosto del 2018. Dopo l'evento, l'attenzione mediatica si è concentrata non solo sul disastroso evento, ma anche sulla gestione della infrastruttura da parte della Società e sulle mancanze nelle manutenzioni, con un acceso dibattito sull'opportunità del rinnovo della concessione. In questo contesto di crisi ASPI avvia un percorso di trasparente revisione delle proprie procedure, che si estende alle controllate e a tutte le funzioni interne e che coinvolge anche il modello organizzativo e la governance.

Nel 2021 Atlantia cede l'88,06% delle quote della Società Autostrade per l'Italia alla Holding Reti Autostradali S.p.A. (HRA), un veicolo di investimento formato da CDP Equity, Blackstone Infrastructure Partners e Macquarie Asset Management. La compagine azionaria di ASPI oggi è rappresentata oggi da CDP Equity e dai fondi gestiti da Blackstone e Macquarie oltre ad Appia Investment e Silk Road.

Figura 2. Azionariato e organigramma del Gruppo Autostrade per l'Italia



Fonte: ASPI

La crisi seguita al crollo del Ponte Morandi, ha condotto al cambio nella leadership di ASPI con l'arrivo del nuovo amministratore delegato Roberto Tomasi e il ricambio generazionale con la sostituzione di tutte le prime linee dell'organizzazione. È in questa fase che prende avvio la trasformazione organizzativa di ASPI:

Siamo partiti dalla convinzione di dover risolvere un elemento specifico che era quello della gestione dell'infrastruttura e progressivamente abbiamo iniziato ad allargare la nostra visione a 360 gradi. Ci siamo resi conto che dovevamo reimpostare l'azienda a tutto tondo senza lasciare nulla di intentato.”

- Roberto Tomasi, Amministratore Delegato, Autostrade per l'Italia

La roadmap verso il cambiamento viene formalizzata nel Piano Industriale ASPI 2020- 2023, articolato attraverso i pilastri del progetto Next (Figura 3), i quali definiscono le principali aree di intervento e le declinano in un'ottica operativa, con un approccio sistematico e graduale alla trasformazione.

Figura 3. I pilastri del Piano Strategico di Trasformazione.



3. Il nuovo baricentro strategico: velocità ed eccellenza operativa

Dal 2020 ASPI ha intrapreso un profondo percorso di rinnovamento interno, ridefinendo il suo orientamento strategico sulla base di due dimensioni: la **velocità** e l'**eccellenza operativa**. Questa trasformazione è stata volta a posizionare l'organizzazione al vertice del settore, attraverso una strategia corporate focalizzata su ricerca, innovazione e sostenibilità.

La velocità è diventata sinonimo di accelerazione creativa, consentendo ad ASPI di sviluppare un approccio integrato e agile al business, mentre l'eccellenza operativa si collega al passato del Gruppo, ancorando le decisioni strategiche all'innovazione, alla competenza ingegneristica e alle risorse infrastrutturali e alle competenze uniche. Questi due principi emergono come fattori chiave che guidano la strategia operativa del Gruppo, la cui nuova missione si propone di “rendere la mobilità più sostenibile, sicura, innovativa ed efficiente”.

ASPI adotta una nuova vision basata sulla centralità delle persone, includendo lavoratori, utenti, fornitori e comunità locali, riconoscendoli come elementi chiave nella creazione di valore e orientando l'organizzazione a promuovere la loro sicurezza, benessere e a svilupparne i talenti.

Nella sua vision ASPI sottolinea inoltre il ruolo dell'infrastruttura autostradale come “spina dorsale” dell'Italia, generando valore condiviso e contribuendo al benessere collettivo.

3.1 La ridefinizione dei valori e della cultura organizzativa

ASPI ha inoltre formalizzato i suoi **nuovi valori**, promuovendoli a principi guida dell'attività dell'organizzazione. Attraverso questa formalizzazione, l'azienda ha riconsiderato la propria identità culturale, utilizzando i valori come elemento unificante per connettere le persone e sviluppare una cultura organizzativa coesa, allineata con la sua vision e la sua mission. I valori nella trasformazione di ASPI rappresentano anche un elemento di rottura rispetto alla struttura precedente, che era caratterizzata da gerarchie rigide e dalla mancanza di comunicazione, diventando il fondamento di una visione condivisa all'interno del Gruppo come “comunità”:

“(…) non possiamo prescindere da due fattori. Da una parte ci sono i valori che permettono all'azienda di immaginare il proprio futuro remunerando i suoi investitori, dall'altra c'è la gestione di una infrastruttura di interesse pubblico che va ben oltre il ritorno aziendale”

- Roberto Tomasi, Amministratore Delegato, Autostrade per l'Italia

I valori di ASPI mettono al centro l'**etica**, la quale diviene il motore dell'agire del Gruppo, e la **trasparenza** come l'elemento fondante di un approccio aperto al mercato, nei processi, nelle informazioni, nella chiarezza delle scelte strategiche e negli obiettivi che vengono condivisi a tutti i livelli. Tra i valori affermati da ASPI, assumono rilevanza anche la **sicurezza**, intesa da ASPI come la creazione di una condizione oggettiva di protezione che tuteli le persone nella fruizione delle infrastrutture e nel lavoro per le infrastrutture e, infine, la **responsabilizzazione** a tutti i livelli, una delle condizioni ritenute da ASPI come necessarie per integrare i valori sociali all'interno dell'organizzazione e fare in modo che si creino strutture permanenti per l'accrescimento della professionalità e dell'agire responsabile e sostenibile.

3.2 Un nuovo modello decisionale partecipativo

ASPI ha rivisto completamente il suo modello organizzativo seguendo una logica di struttura lineare, ridefinendo funzioni e ruoli sia a livello centrale che nelle divisioni di tronco. L'organigramma è stato reso accessibile a tutti i livelli, per facilitare una trasparente lettura delle funzioni e una maggiore conoscenza interna dei rapporti tra le strutture.

Figura 4. Struttura dei Comitati Manageriali.



Fonte: ASPI

La nuova struttura dell'organizzazione ha privilegiato la comunicazione orizzontale basata sui Comitati Manageriali che rappresentano le tredici aree ritenute chiave per lo sviluppo del business e la realizzazione della mission del gruppo. Questa struttura facilita la comunicazione trasparente delle informazioni, promuovendo la collaborazione tra funzioni corporate e controllate e creando un naturale approccio orizzontale nella definizione dei ruoli e delle decisioni. I Comitati Manageriali hanno permesso di superare la struttura gerarchica e a silos, favorendo maggiore autonomia tra le funzioni, garantendo al contempo un costante controllo e circolazione della conoscenza e dei dati.

3.3 Comunicazione e democratizzazione dei sistemi decisionali

I principi e valori della trasparenza e della responsabilizzazione delle persone e della centralità del dato sono stati i driver di un processo di istituzionalizzazione del dialogo tra funzioni interne alla corporate, e tra la corporate e le loro controllate, che ha condotto all'affermazione del "Dialogue for Company Values". Si tratta di una piattaforma di scambio e un luogo permanente di discussione, di raccordo e di problem solving interfunzionale che opera attraverso un set di meeting prestabiliti a cadenza settimanale o mensile, in cui vengono discussi aspetti strategici e operativi legati al business di ASPI.

Il Dialogue for Company Values funziona quindi da leva per aumentare l'efficacia dei processi informativi e decisionali e l'accountability interna mediante il coinvolgimento e la responsabilizzazione diretta dei singoli individui coinvolti nelle decisioni, con una circolazione continua delle informazioni e dei dati.

Figura 5. Finalità chiave del Dialogue for Company Values.



Fonte: ASPI

3.4 Il digitale come abilitatore: il valore del dato

La digitalizzazione ha rappresentato uno degli aspetti core del piano di trasformazione organizzativa di ASPI. Infatti lo sviluppo in chiave digitale del Gruppo si è uniformato ai principi stabiliti all'interno del piano "Next to Digital", che attribuisce una nuova centralità alla trasformazione digitale come parte integrante della nuova struttura organizzativa basata sulla trasparenza e la condivisione dei dati. Le attività di sviluppo della trasformazione digitale sono state organizzate su nove aree core, in coerenza con la vision ed i valori di ASPI. Tali aree si strutturano in Chapter attraverso cui viene gestita operativamente la trasformazione digitale. All'interno delle aree prioritarie sono stati inoltre individuati 60 use case. A ciò si affianca l'adozione di una modalità di lavoro agile che, attivata nel settore IT, è stata adottata dalle altre aree funzionali, ed è diventata di dominio comune in tutta ASPI. Oggi in azienda vengono gestite più di 40 room agile in parallelo con la partecipazione di circa 1.800 persone appartenenti a tutte le funzioni del Gruppo, includendo le Società controllate:

"Secondo me è stato molto rilevante, almeno per il buon esito del piano di trasformazione digitale, l'aver adottato un modello di lavoro agile, senza il quale oggettivamente ASPI non sarebbe riuscita a realizzare quello che ha fatto in tre anni."

– Danilo Gismondi, Direttore IT e Digital Transformation - Autostrade per l'Italia

Il risultato della digitalizzazione è stato il coordinamento e l'adattamento spontaneo delle funzioni dell'organizzazione mediante un flusso di informazioni trasparenti e accessibili.

In ASPI i dati non sono più appannaggio di una singola funzione o dell'area che li ha generati, ma sono immagazzinati in repository e vengono condivisi e resi pubblici.

I dati divengono inoltre attivatori del dialogo interno e collettivo che si svolge nell'ambito delle strutture create per gestire i processi di decision making in chiave collaborativa e informata, attraverso i Comitati Esecutivi e le strutture del Dialogue for Company Values:

"Da qualche anno abbiamo definito un indice di copertura digitale dei processi aziendali che si chiama Digital Coverage Index. Questo indice nel 2020 era sotto il 25%, ad inizio 2021 era di circa il 30%. Abbiamo chiuso l'anno 2023 con una copertura digitale media del 75%."

- Danilo Gismondi, Direttore IT e Digital Transformation, Autostrade per l'Italia

La trasformazione di ASPI ha quindi previsto l'adozione di un modello di decision-making guidato dai dati, utilizzando in tal modo le informazioni raccolte e condivise come guida per la presa delle decisioni a tutti i livelli: corporate, business e funzionale.

Oggi, l'organizzazione utilizza i dati per monitorare il mercato, prevedere andamenti e valutare le prestazioni in tempo reale. Questo gli consente di reagire dinamicamente alle sfide sistemiche e alle nuove tendenze della mobilità. La trasformazione data-driven è stata abilitata dal digitale, che ha creato connessioni significative tra persone e infrastrutture attraverso cinque principi chiave: centralità dei dati, sicurezza, velocità di esecuzione, connessione e trasparenza interna e infine ricerca.

ASPI ha valorizzato la trasparenza e l'importanza dei dati attraverso una ristrutturazione dei processi interni e la mappatura degli asset. Il progetto PWAY, si è incentrato sulla mappatura dei processi aziendali con un approccio di catena del valore e di standardizzazione. Ogni attività è stata dettagliatamente mappata attraverso flow diagram di input e output, seguendo una struttura gerarchica dal livello 0 al livello 3. Complessivamente, sono stati mappati 38 processi di livello 0, ciascuno associato a un owner e arricchito da ulteriori microprocessi al livello 3, portando a oltre 2300 flow diagram di processo. I dati sono facilmente accessibili all'interno dell'intranet aziendale tramite un repository interattivo, promuovendo la conoscenza diffusa dei processi e garantendo la continuità delle informazioni anche con il turnover aziendale.

Accanto alla mappatura dei processi, anche la mappatura degli asset è stata ritenuta strategica al fine di assicurare l'ottimizzazione delle attività di monitoraggio delle opere in concessione, il miglioramento della governance dei dati sugli asset e l'ottimizzazione dei processi di ispezione e di manutenzione degli stessi. Il processo di mappatura degli asset è stato realizzato attraverso la digitalizzazione degli stessi mediante Argo, una piattaforma digitale unica a livello europeo, basata su strumenti di Intelligenza Artificiale e sviluppata con il supporto di IBM e la controllata Movyon. Argo è un inventario digitale che raccoglie e gestisce i dati strutturali di ponti, cavalcavia, viadotti e gallerie, e che in tal modo possono essere aggiornati in tempo reale. L'installazione di sensori IoT consente inoltre di raccogliere dati sullo stato di salute delle opere mappate. Il building information modeling, che viene creato partendo dai dati del database, consente inoltre di supportare l'operatore nella fase ispettiva. Mediante le tecnologie di geo-referenziazione è possibile inoltre effettuare scansioni tridimensionali dell'opera, mentre l'integrazione dell'Artificial Intelligence affianca l'operatore nell'analisi puntuale delle fotografie dei droni e nell'approfondimento degli aspetti che attengono l'identificazione puntuale dei difetti associati ai componenti dell'infrastruttura.

3.5 Il valore delle persone: coinvolgimento, benessere

L'aver incluso le persone e il loro valore nella vision dell'organizzazione diventa il pivot che orienta il reframing organizzativo di ASPI alla centralità delle iniziative che sono volte alla valorizzazione del benessere organizzativo a tutti i livelli, mediante l'istituzionalizzazione della inclusività e della diversity. La valorizzazione della diversità e dell'inclusione all'interno dell'organizzazione si avvale del contributo dell'Employee Resource Groups (ERG), un team interno ad ASPI ad appartenenza volontaria attivo nella promozione di iniziative e progetti inclusivi con idee e competenze specifiche.

Le iniziative per l'accrescimento del benessere organizzativo hanno inoltre previsto una sistematizzazione del ricorso allo smart working. L'accordo sulla flessibilità firmato da ASPI ha dato una forte spinta il lavoro da remoto, per corrispondere ad un triplice obiettivo organizzativo:

- *aumentare la produttività aziendale;*
- *favorire la conciliazione famiglia-lavoro;*
- *ridurre l'impatto sull'ambiente.*

Nel percorso di valorizzazione delle persone, il nuovo modello organizzativo di ASPI ha inoltre previsto la creazione di istituzioni interne volte a promuovere l'attivazione e la partecipazione dei dipendenti nella comunità mediante il modello delle Communities, concepite come organismi che hanno il ruolo di reti di connessione con il mondo esterno all'organizzazione, per la condivisione sul territorio e con le comunità locali dell'expertise e dei valori del Gruppo.

3.6 Leadership generation: talent nurture e attraction

La vision umano-centrica di ASPI ha guidato l'implementazione di un nuovo framework di talent attraction e nurture, focalizzato sulla multidimensionalità. Questo approccio si basa sull'attrazione di nuovi talenti mediante relazioni solide con enti formativi esterni e sull'investimento nell'up-skilling e re-skilling delle risorse interne. I programmi dedicati agli "Alti Potenziali", identificati come le risorse di talento che mostrano elevate performance e alto potenziale, promuovono la crescita attraverso percorsi dedicati di induction, formazione manageriale, coaching e "Shadow Management". Questi programmi consentono il costante allineamento della leadership ai valori dell'organizzazione e favoriscono il training on the job per lo sviluppo delle capacità di guida dei manager di domani.

3.7 Il valore della sostenibilità

La mobilità sostenibile è identificata come un elemento distintivo della mission del Gruppo e rappresenta uno dei pilastri del Piano Trasformativo ASPI, che segue il mega-trend del green. ASPI ha fissato obiettivi strategici basati sull'integrazione nella propria strategia di business dei pilastri ESG (Environmental, Social, Governance), legandoli al programma di trasformazione NEXT. Questo orientamento strategico guida una transizione verso l'infrastruttura connessa e digitale che abilita la mobilità sostenibile del futuro:

"Noi siamo andati verso una direzione diversa e quindi abbiamo reso la sostenibilità un asse strategico della nostra missione. Peraltro, questo si sposava benissimo già con la mission e la vision che proprio in quel momento venivano definite: ASPI come operatore della mobilità sostenibile, efficiente, all'avanguardia."

- Concetta Testa, Head of Sustainability, Autostrade per l'Italia

La strategia ESG di ASPI ha già permesso di ottenere significativi Rating ESG da parte di agenzie riconosciute a livello internazionale (e.g. Moody's - ESG Solutions, CDP - Disclosure Insight Actions) e una prima evidente prova dell'impegno dell'azienda di integrare le questioni ambientali e sociali nella propria strategia di sviluppo e nella propria struttura di governance sono le emissioni obbligazionarie sostenibili, collocate dall'inizio del 2023 per un valore complessivo di circa un miliardo e mezzo.

3.8 Il reframing del network esterno

La forte capacità di innovazione tecnologica di ASPI si manifesta attraverso collaborazioni con società controllate che consente di creare una rete di risorse e competenze interne distintive ed integrate. Questa rete solida è fondamentale per lo sviluppo del business e la realizzazione di soluzioni digitali per migliorare la velocità e l'eccellenza operativa, ottimizzando al contempo i processi interni.

L'orientamento aperto all'innovazione si riflette tuttavia anche nelle molteplici collaborazioni con enti di ricerca, istituzioni e altre imprese del settore. La logica che presiede all'innovazione è quella di esplorazione continua e che permette ad ASPI di riconoscere idee, trasformarle in sperimentazioni e convertire i risultati della ricerca in valore condiviso, integrando costantemente le innovazioni nel proprio business.

L'organizzazione è inoltre attenta alle innovazioni sviluppate da parte di startup e alla valorizzazione dei progetti e delle idee da parte di ricercatori, supportando in tal modo i processi di trasferimento tecnologico:

"Il Gruppo ASPI ha l'ambizione di partecipare da protagonista alla rivoluzione della mobilità sostenibile che sta interessando il trasporto. Una sfida in cui lo scambio con università ed enti di ricerca e la partecipazione ad eventi e

convegni dedicati sono diventati elementi più centrali nel percorso di trasformazione intrapreso. Abbiamo partnership con realtà nazionali europee che raccolgono le diverse concessionarie autostradali e/o operatori del settore. La partecipazione a convegni e seminari ci stimola a immaginare e trovare soluzioni, che possono essere implementate e ci spingono a pensare a nuove idee, che oggi condividiamo al nostro interno molto più che in passato.”

- Gianluigi Iacobone, Direttore Ufficio Studi e Strategie, Autostrade per l'Italia

Cosa apprendiamo. Un modello organizzativo agile come equilibrio nel paradosso

Il caso ha analizzato gli elementi costitutivi della trasformazione di ASPI, identificando i **principali motori del cambiamento**, i **driver della trasformazione** e le **attività di reframing** che sono state poste in atto per realizzare il cambiamento organizzativo.

La rapida evoluzione dello scenario di riferimento, guidata da un lato dall'evoluzione delle tecnologie digitali disruptive, con la conseguente trasformazione del mercato della mobilità, e dall'altra dalla crescente attenzione alla sostenibilità ed alla sicurezza come nodi centrali nel futuro dalle gestione delle infrastrutture, hanno rappresentato, insieme agli elementi del meso e del micro-scenario, dei fattori di innesco della trasformazione che ha rivoluzionato il modello organizzativo di ASPI in chiave agile.

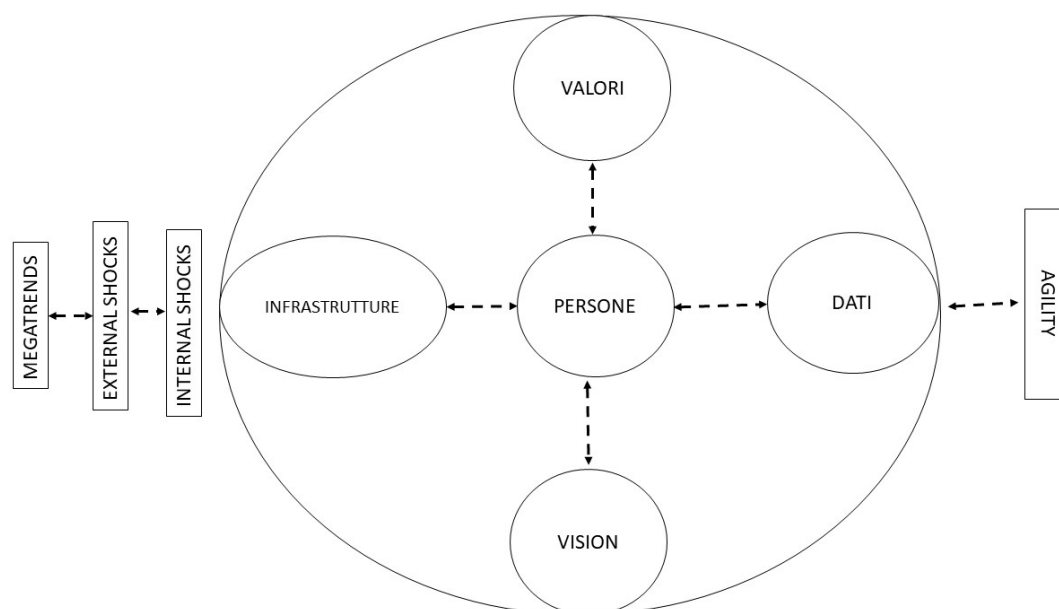
Infatti, l'esigenza di rispondere attivamente al dinamismo del contesto esterno, con velocità, agilità strategica, e al contempo di effettuare immediati interventi correttivi e di early warning per prevenire eventi fatali e correggere le inefficienze del passato, valorizzando i principi di qualità, sicurezza, eccellenza operativa, sono stati driver di revisione delle strutture organizzative del gruppo a 360°.

Si tratta di un processo che ha coinvolto l'organizzazione a tutti i livelli, sia la corporate che le sue controllate, e che ha permesso di considerare il cambiamento come parte integrante della nuova vision del Gruppo.

Il caso mostra come la trasformazione in chiave agile di ASPI fa leva su tre dimensioni fondamentali di cambiamento che sono: le risorse chiave (gli asset infrastrutturali), i Dati (abilitati dal digitale) e le Persone (il talento e le comunità). Queste tre dimensioni sono state interpretate dall'organizzazione come tre risorse dinamiche capaci di conferire all'organizzazione agilità strategica, potenziandole quindi la capacità di cogliere le opportunità in mercati in rapido sviluppo (McCann, 2004), di percepire i cambiamenti esterni e di adattarsi con velocità (Braunscheidel & Suresh, 2009). Tali dimensioni sono connesse e sono alla base della creazione di una organizzazione capace di raggiungere equilibri dinamici anche in condizioni esterne incerte, guidate dalle twin transition e dalle global policrisis.

Il collante tra questi tre building blocks dell'agility è rappresentato dai valori e dalla vision dell'organizzazione, i quali divengono la guida dei processi decisionali e di gestione degli asset e delle risorse, ponendo le basi per la creazione di un'impresa non solo responsabile ma anche partecipativa e partecipata, intesa come comunità di principi e di valori e orientata al benessere della collettività.

Figura 6. I building blocks della trasformazione organizzativa al tempo delle paradoxical tensions.



La centralità dell'etica dell'agire organizzativo pone inoltre le basi per costruire una nuova relazione nei confronti degli stakeholder e degli azionisti basata sulla responsabilità (Goel e Ramanathan, 2014), con un codice di condotta istituzionalizzato per l'organizzazione che è il punto di orientamento per la costruzione di un player di mobilità capace di essere attore di innovazione responsabile nel settore, pur mantenendo il legame con le proprie tradizioni e con la propria comunità.

Il principio dell'eccellenza operativa valorizza l'heritage del gruppo fondata su competenze ingegneristiche inimitabili, le quali rappresentano la fonte di capacità dinamiche nel mercato presente e nell'industria della mobilità di domani.

Inoltre, il tragico evento del ponte Morandi, la crisi organizzativa che ne è seguita e il cambiamento della leadership hanno dato insieme avvio ad un percorso di riflessione profonda a tutti i livelli, generando un ground zero organizzativo che ha rappresentato il punto di partenza nella ricostruzione dei significati dell'organizzazione, dei suoi valori, del senso da attribuire al passato e alla proiezione futura del Gruppo.

Questi fattori di crisi interna hanno creato l'opportunità di implementare cambiamenti positivi, alimentando la readiness dell'organizzazione e potenziando la sua capacità di adattamento e la sua agilità strategica. In ciò il caso dimostra anche come le crisi organizzative, se gestite in modo cooperativo e risolutivo anziché focalizzarsi solo su colpe e responsabilità, possono diventare un'opportunità per rinnovare il purpose dell'organizzazione e avviare processi di trasformazione in chiave agile.

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Track 5
**Management of sustainability and well-being
for individuals and society**

Happiness and emotions at work in organizational relationships. The role of affectivity and empathy for meta-organizational and non-hierarchical solutions in the resilient firm

LUCIANO PILOTTI¹

Abstract

Creative and intelligent organizations (private and public) have the task of offering favorable and welcoming contexts, enabling and facilitating meaningful relationships between people with their collaboration and cooperation, placing them at the center of their action for a continuous improvement of the corporate climate. This happens for ethical reasons, but also because this improves creativity and performance, reducing the cost of conflicts and absenteeism and increasing relational potential also as a source of increased cognitive productivity and meaning, therefore of cohesion. More participatory and non-profit maximizing but resilience-oriented organizations to improve the ability to adapt in complex worlds to push the convergence of the double ecological and digital transition. Among the most underestimated levers of transformation we find the qualities of human capital and relationships between people as sources of shared creation of value through the mobilization of emotional intelligence (catalyst of 4 other integrated intelligences - analytical, practical, creative and social) and dynamics capabilities for increasingly open, inter-disciplinary and inter-functional roles. The objective of this work is to illustrate these emerging processes of organizational change for greater inclusiveness and cohesion for more participatory business models that lead towards greater job satisfaction and therefore also towards states of greater shared happiness.

Key words: *Happyness, emotions, post rationality, human-social capital, 4 integrated intelligence, organizational change*

Framing of the research. *The research paper focusing in the first part the transformation of organization over crisis of Fordism and hierarchical model of organization of labor facing the complexities of the world as interdependencies between digitalization, servitisation, sustainability and grouping competences. In the second part we explore the factor of post rationality following the seminal work of H.Simon until more recent work of Norman, Fineman or Rizzolati on neuroscience and mindfulness. The third part of the paper develop the organizational interconnections between 5 types of intelligence: practical, analytic, creative, emotional, social as a tool to build a grouping intelligence able to support a more large responsibility of every person and group. The forth part of the paper develop the connections between emotional intelligence and sensemaking as hyper-competence clue of politics coalition of organizational process towards a new social architecture of organization overcome hierarchy for a better and large participation of human resources to define strategy as an ecology of value in sharing knowledge and developing dynamic capabilities over traditional specialization of work. Realizing in that perspective a good level of happiness of people in organization and consequently a good level of resiliency for the growth in the long run.*

Purpose of the paper. *The purpose of the paper is to demonstrate the relevance of emotional intelligence in organizational eco-system as a key of adaptation able to improve concept of efficiency with a mixture of competences and virtues transforming the nature of leadership in coaching for new social mix of firm culture and best practice reinforcing participation, inclusion and gender pluralism reaching a diffuse spreading of happiness in organization.*

The path to spreading happiness at work is - for the things said above - a complex and medium-long term process that is intertwined with the construction of a happy job. Starting from generating a purpose and creating around it friendships, proximity and enthusiasm aimed at sustaining a hopeful outlook on the future. One of the key vehicles for organizationally achieving these objectives is the arborescent construction of a (micro) reference group where the trust-recognition in the potentials and the positivity necessary for medium-long term valorisation can blossom, through an initial sharing of purposes, norms and vision, with which to look positively at a horizon of meaning before us. A group where they receive the necessary recognition of their objectives and the results achieved and where respect for oneself (and others) in a relationship between equals is the fundamental enabling and triggering resource for meaningful and meaningful work, intelligent as well as useful, also as a discriminating barrier towards "negative" behaviors and cultures. Key to mobilization, training and maintenance of semantic capital intertwined with the quality of human and social capital

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in networks (Butera, 1990). For this reason, a generically understood friendship or a widespread yet equidistant and cold provision of empathy is not enough, but to achieve personal and corporate objectives together it is necessary to actively build "groupness":

- a - commit to maintaining the quality of the group atmosphere;
- b - develop the identification of common goals and a shared vision;
- c - formulate rules capable of facilitating the emergence of all the emotional potentials of the group members;
and - safeguard "group diversity" by encouraging inclusion and avoiding excessively exclusive or prejudicial behavior;
- f - create supportive, lively, engaging, fun, welcoming and relaxed environments.

A process that is an integral part of the construction of an expanded, shared and inclusive corporate culture of which our way of thinking and experiencing emotions are constitutive, putting our potential and that of the group to work, bringing out all possible talents, blazing a path to happy work, spreading happiness. They are the most open to new, creative, adaptable, collaborative, resilient and inclusive corporate cultures.

Of course, not all corporate cultures allow this path towards a piece of happiness to be achieved without suffering and effort and therefore producing unhappiness. The major obstacles are found in:

- i - excess pressure for short-term results;
- ii - excessive hierarchical pressure against dissent;
- iii - excess pressure from competitive antagonism;
- iv - excessive verbal redundancy without values and facts;
- v - lack of clarity on vision;
- vi - lack of respect;
- vii - absence of appreciation;
- ix - excessive pessimism;
- x - excesses of intolerance;
- xi - absence of equity and justice;
- xii - absence of balanced meritocracy.

A set of conditions that emotionally create distrust, fear, cynicism, anger, enormous waste of time, energy and talents and therefore with widespread outcomes of unhappiness which often translate into absenteeism, renunciation of participation, closure. In the long run, they generate conflict, detachment and rupture with exit solutions to overcome suffering, injustice and, sometimes, even behavioral damage.

Instead, we need emotional prosperity, in sharing and inclusion, developing integrity, justice, equity, valuing differences as a contribution to creativity, not separated from compassion and humanity in treatment. Because this is the way to ensure the right to growth and personal development of the individual, in the valorization of all the virtues and fundamental values (such as honesty, gratitude, indulgence, wisdom, affection) consistently with the growth of a shared vision of organization for superior profitability coupled with man's higher purposes towards a more just society. Therefore, skills and competences are not enough if not accompanied by virtues that effective HR must know how to investigate and enhance.

Methodology. Methodology of the work is focused on different case studies and secondary data for longitudinal analysis of organization in different cultural contexts (USA, European and Asian context) about the nature of leadership and transformation of it all over the world.

Results. Main results confirm the convergence between transformation of organization and convergence of individuation and cohesion principles overcome hierarchy model toward a flat model of situated context of relational capital in coordination process of chain of situated actions with cooperative labor multi-competence, reciprocal coordination and cognitive division of labor.

Friendship is the most formidable vehicle for strengthening meaningful and meaningful relationships, that is, a way to select and choose them in conditions of trust, sincerity and authenticity. For there to be friendship, authenticity and trust we must immerse ourselves in the recognition of the Other in order to be recognized and considered in turn. To offer the best of ourselves we must primarily feel part of a group from which we have sincere stimuli for improvement and into which we pour our trust and commitment. So there is a sociality (wide or narrow) in which we can immerse ourselves to feel part of a team, a team, a common adventure or project. In these conditions, the sense of belonging and esprit de corps are united with affectivity as the "erotic" glue of our relationships without remaining - possibly - prisoners of univocal and unilateral obsessions and passions. It is widely demonstrated that "good relationships" produce "good results" and this applies at work as in family or friendship relationships. But it is clear that this does not exist in nature, but requires our exploratory commitment and our availability to build (or reconstruct) empathic tissues by acting with sincerity, transparency and hospitality, starting from the assumption that we must live much of our time together with others in the company (as in the community or family) and we must make sure that we live it to the fullest and in a sensible and meaningful way, first and foremost by learning to welcome, understand and listen. But also learning to give up pieces of ourselves to the Other with whom we share work, tasks, projects, time, not fearing the expression or emergence of affectivity between emotions and conscience. In short, demonstrating empathy and that we are available to care for and care about the Other and not simply that "you are or are useful to you". It is clear that the emergence of self-interested behavior in relationships produces detachment and suspicion and every person in the company (or outside, in the

community or in the family) who does not feel respected or, worse, ignored, will withdraw in a defensive way. adopting strategies or actions of detachment or disinterest. In the company, what is needed instead is trust and understanding, to spread an environmental climate conducive to mutual concern, always aiming for high ethical values in transparency, which are even more relevant in moments of crisis and conflict. It then becomes fundamental for the company to communicate well and place itself in a position to receive answers, comments and reactions, opening itself up to their active understanding, both individually and collectively.

Here we need to put our emotional intelligence (EI) to work, as the engine of a cognitive and relational commitment to the construction of a meaning to our existence in that work and organizational context. Even highlighting incompatibilities or inconsistencies, as long as they are motivated and analyzed in depth, accompanying us to a conscious and responsible choice, without resentment or vindictive warnings often deriving from excessive personalization. Friendship at work is a glue for healthy relationships at work both for having fun and also for calmly dealing with crisis and conflict situations. The company that promotes friendship at work (as well as love) will also be a successful company.

Research limitations. The main limitation of work is empirical validation of main results that should be developed better with a more large longitudinal data in many countries, comparing different liberal democratic national contexts and possibly in a second step also with a comparison in a non liberal context (Cina for example).

Managerial implications. We can underline main managerial implications about the transformation of organization and different standard of efficiency comparing mechanical with biological perimeter of these in front of change in the complexity of the world.

Many investigations seem to point out the relevance of mobilizing emotional intelligence coupled with meaningful leadership (which approximates coaching) or - better yet - shared employeeship. Finally, that there is an underlying happiness that links what happens at work and what happens in private, domestic and family settings. In fact, we can reasonably expect that a happy worker or manager will be more motivated and involved, therefore more productive and creative, if they can be so in both areas of life with a more sustainable work-life balance and which companies try to achieve with welfare which in Italy still remains too "lukewarm" and limited to medium-large companies. In short, taking seriously the idea of happiness at work that mobilizes positive emotions, producing value for the individual as well as for the company (and for the environment), even if not always immediately recorded in consolidated financial statements, but certainly generating value in the medium-long term as appears to emerge from various empirical investigations (including Italian ones) on absenteeism, corporate welfare and smart working.

Overall, corporate investigations on the topic of corporate welfare, smart working and smart organization seem to converge on the idea that to enhance "happiness at work" we need to connect in a shared fabric of languages of collaboration and cooperation, the chain of connections between positive emotions, intrinsic motivations and commitment which are the foundation of semantic capital within more participatory organizational models even "beyond" the German model of *Mitbestimmung*, crossing the thread of the following dimensions in the production of meaning :

- Hope
- Scope
- Friendship
- Empathy
- Affectivity
- Sense

A purpose or meaning must be found within ourselves, first of all by selecting the activities to which we attribute the most value and which serve us to understand whether the organization we have chosen has the actual and/or only potential characteristics to offer the best conditions for this to happen. future and how much we can contribute to it. Therefore, without waiting for there to always be a sort of "invisible hand" that creates those useful Olympic conditions, because this will never happen without our active contribution. Our contribution is as important as the pre-existing conditions in which to operate and change ourselves and the organization itself. Our values then become an active part and not separated from the company objectives, because they are never extraneous to the workplace.

Have a purpose well defined and shared is then a relevant lighthouse to look at to signal the way forward, which strengthens us and makes us more resilient in the face of shocks. Because this allows us to better discriminate what is satisfactory from what is not by establishing in an ordinal way a system of objectives that are both subjective and organizational.

Originality of the paper. The main originality of the paper is an alternative use of a different field of organizational science in a mix with psychology and neuroscience developed in the last book.

We can see main impact by integrating plural corporate cultures in osmotic forms with multiple jobs that turn into skills and competences (but also interconnected virtues) and which we now list without any pretense of exhaustiveness:

- a - sensitivity to different bases of organizational and digital cultures;
- b - ability to innovate both in skills and un-skills areas;
- c - enabling the adoption of continuous connective learning strategies;
- d - stimuli towards multiple two-way communication skills;
- and - hybridizing co-creation of knowledge and focal solutions towards interdisciplinarity and inter-functionality;
- f - speed of ideation and prototype testing;
- g - ability to contaminate group openness - exchange - collaboration;

h - ability to influence and transfer, inspire and engage people;

i - multiple skills and competences in listening and active dialogue;

l - development of self-awareness and redefinition of command figures "beyond" control towards self-organization.

Abilities and skills which - not separated from virtues - enable meta-organisational solutions which decompose the traditional hierarchical structure (of the Weberian style applied by Fordism) capable of intercepting, speeding up and governing change management trajectories also in terms of de-hierarchisation and reticularisation (of people, groups, functions):

I - transversal communities of experts capable of contaminating traditional corporate culture, in particular - for example - in Big Data, IoT, Cybersecurity, AI, deep learning;

II - activation of cross-functional committees to guide systems of project objectives;

III - definition of "end-to-end" responsibilities of strategic processes;

IV - activation of DevOps, Agile, Lean organization methodologies ;

V - mixed multi-channel dynamic training formulas (unstructured frontal classroom, flipped classroom, synchronous and a-synchronous multidevices, theatrical and simulation workshops);

VI - mobilization of people's energies for the creation of meaning, with inter-generational exchanges, idea-sharing and contests, with prizes and recognition

The reasons for the effectiveness and efficiency of these solutions and approaches are now evident and confirmed by multiple investigations because we are looking for business contexts where we can first of all be satisfied and, possibly, even happy. Without fearing this last category, we must set ourselves the objective - already implemented by many companies - of bringing together the individual prosperity of people with the corporate-organizational and environmental prosperity as well as that of the communities they belong to through second-level welfare plans. By adopting suitable tools for co-generation of potential with a contractual regulation that accompanies - both workers and the company - a reasonable and sustainable compromise between motivation, reward, life (and professional) trajectory and climate (internal) with significant effects on the community territorial reference (external).

But what ensures lasting and robust satisfaction at work and in organizations? What type of intelligence needs to be mobilized? Which leadership is compatible with this underlying objective that links individuals to the company in the medium-long term along with life career strategies and not simple ones? How much does this influence the relationships between the company and the territories in which it is inserted in relation, for example, to its own identity?

Starting from the consideration that we spend two thirds of our life time at work (whether direct or indirect) this is reasonable to be spent well and in well-being (physical, cognitive, emotional), in a meaningful and meaningful way, in which to rediscover one's efforts and the commitment made as an expectation of meaning. Above all to connect responsible medium-long term choices to the short and everyday which is not always possible or easy to separate - except with behavioral refractions that undermine our balance and the serenity of our condition - useful for maintaining clarity in understanding what surrounds us and the relational and organizational dynamics. Because if primary needs can be ordered in some hierarchical form, for motivational needs an emotional-sentimental (or empathetic) balance is needed first and foremost because there is no simple orderability and because they fluctuate in time and space. That balance serves us to decide responsibly and not impulsively, not hastily, taking into account the context in which we find ourselves and looking at the possible consequences of our actions and their sustainability in space-time.

For all this we need Emotional Intelligence (EI) between the ability to listen, understand and act in the construction of a meaningful relationship, that is, one that goes beyond the immediate and that knows how to dynamically align choices at work and at work with private choices outside work, friends and family. Where simple extrinsic motivation or salary is no longer sufficient to retain workers (or attract new ones) given the wave of (voluntary) resignations in the last three years - in Italy, in Europe and in the world - where according to Gallup surveys (2023) there is an average of 75% of the working population dissatisfied with their work and/or the working environment. The causes of the Great Resignation derive from the search for well-being "without adjectives", that is, for some approximation of possible happiness, as a process that is never finished but always accessible and distant from any form of performance optimization to maximize remuneration.

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The shortage of skilled personnel in the transition from Industry 4.0 to Industry 5.0: Impacts and challenges in the machine tool industry

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Abstract

In a context of transition from Industry 4.0 to Industry 5.0, there is a change of approach, from techno-centric to value-centric, with effects on the figure of Operator 5.0. To date, literature doesn't address the issue of skills mismatch in high technological sectors. This study examines how these transitions impact skill mismatches in machine tool sector. Using a mixed-method approach, it analyzes data from 13.2% of Italian machine tool manufacturers and conducts qualitative interviews.

The study reveals that: 1) while Industry 4.0 technologies fail to alleviate shortage of technical-skilled personnel, there is a growing but unconscious adoption of Industry 5.0 principles; 2) The primary challenge lies in inadequate technical training from education system and a lack of dialogue with industry.

The paper suggests companies address recruitment challenges through targeted training programs and engage policymakers. This research contributes to European Union directives and advances Operator 5.0 theory in machine tool sector.

Key words: industry 5.0; industry 4.0; operator 5.0; mixed-method; computerized numerical control machine tools

Framing of the research. *In 2015, Rada coined the term 'Industry 5.0' (Bessa et al., 2023) to highlight the centrality of the environment and people in industrial processes. Later, in 2016, Keidanren introduces the concept of 'Society 5.0' (Aires Moreira et al., 2021), focusing on the balance between economic development and the mitigation of socio-environmental problems, considering technologies not only as profit-making tools, but also as means to improve the quality of life of citizens. In 2018, Østergaard, co-inventor of the UR cobots (Kaivo-Oja et al., 2020), emphasizes the advent of Industry 5.0 as the return of the human element in production, arguing that Industry 4.0 leads to the dissipation of human creativity and critical capabilities.*

The importance of the topic is reinforced in 2021, when the European Commission decides to publish the report 'Industry 5.0: Towards more sustainable, resilient and human-centric industry' (EU, 2021), which is part of major policy initiatives on industry and technology, such as the regulation on artificial intelligence and the Green Deal.

The Industry 5.0 paradigm does not present itself so much as a technological or technical revolution, but more as a cultural revolution, bringing operators and the environment back to the forefront of production processes; it is thus spoken of as a complementary process to digital transformation and completion of Industry 4.0. In defining the development model of Industry 5.0, the European Commission identifies three essential pillars (EU, 2020), which would guide the transition from Industry 4.0 to Industry 5.0: human-centricity, sustainability and resilience.

The 5.0 paradigm – which shifts the focus from a techno-centric approach (focused on technology and its ability to control and protect the environment) to a value-centric one (focused on the idea that technology must be used to adapt the production process to the needs of workers and economic, environmental and social sustainability) – increases issues already present with 4.0. In this context there is a need to reflect on the emerging figure of the Operator 5.0 (Romero et al., 2021) and to understand its distinctive characteristics. The Operator 5.0 or 'Resilient Operator 5.0', adds to the requirements of social sustainability and human-centricity already present with Operator 4.0 (Bernus et al., 2016), the requirement of resilience, to complete the concept of Industry 5.0. The vision of Resilient Operator 5.0 focuses on the one hand on the creation of 'self-resilience' for the workforce and on the other hand on 'system-resilience' for human-machine work systems, in a production mechanism in which human operators and machines cooperate to ensure the best possible functioning of the overall system. Self-resilience refers to the productivity of each worker within the production environment.

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However, although the concept of the Operator 5.0 was predominantly introduced in the engineering literature with the need to implement resilience, an interdisciplinary understanding of the 5.0 operating elements and competencies that consider both technical and social aspects is lacking to date, in view of a transition from Industry 4.0 to Industry 5.0 (Castagnoli et al., 2022).

In the manufacturing industry, a sector that is a pioneer in adopting 4.0 technologies (Büchi et al., 2020), and is facing the transition to Industry 5.0, the skill mismatch is a growing problem (Cugno et al., 2022). In Italy, out of 531,000 job hirings planned for September 2023, 48% remained unfilled, due to the gap between the skills of workers and those required by companies (Unioncamere/Anpal, 2023). What is more lacking are technical-specialized, particularly in the Italian manufacturing sector, where the computerized numerical control machine tool industry demands advanced expertise from operators and designers due to increasingly complex machinery.

While the transition from Industry 4.0 to Industry 5.0 represents a turning point for the Italian machine tool industry, it could exasperate the shortage of specialized personnel, as the integration of increasingly complex technologies requires more articulated and transversal skills (Ucimu, 2023). The study conducted by Ucimu emphasizes the predominant effect of technological transformation on human resources, particularly on operators working in close synergy with high-tech machinery. This scenario underlines the importance of acquiring specific technical skills not only for those who are responsible for designing the machinery, but also for operators who use it.

In this context, skills can be considered a lever of competitiveness for companies in the sector; the result is an accentuated enhancement of the human figure.

Purpose of the paper. The paper enters the research strand on the Operator 5.0 with an interdisciplinary perspective aimed at understanding the changes in the figure of the Operator 5.0 brought about by Industry 4.0 and Industry 5.0. For this reason, the paper investigates the following research question: How does the adoption of Industry 4.0 and Industry 5.0 affect the problem of the shortage of qualified personnel in the machine tool sector?

The hypothesis that technological implementation can reduce this problem is based on the idea that automation and the use of advanced technologies can increase production efficiency by reducing the need for human resources for certain activities. Indeed, automation has had a significant impact on unemployment in various sectors, reducing the demand for unskilled labor but increasing the demand for highly skilled workers (Castagnoli, 2023).

The aim is therefore to test the hypothesis that technological implementation can reduce the need for personnel and thus mitigate the problem of the lack of skilled workers in certain sectors.

Methodology. The article adopts a mixed-methodology, quantitative and qualitative. As far as the quantitative analysis is concerned, a survey was developed, addressed to population of 250 Italian companies associated with Ucimu-Sistemi per Produrre, covering over 70% of the made in Italy sector (Ucimu, 2023).

The survey is administered between July and September 2023, on a structural level, it comprises 18 questions, divided into four macro-sections: the first one is dedicated to general questions about the company, the second to questions on the company's degree of technological implementation on Industry 4.0, the third to questions on the degree of attention towards Industry 5.0 principles and the fourth to questions on the difficulty of finding personnel.

The first part aims at obtaining information regarding the responding company in the survey; it should be specified that some informations (such as the number of employees of the responding company) are obtained directly from Ucimu, which offers direct contacts and data of its member companies.

The second section of the survey aims at obtaining information on the degree of technological implementation of Industry 4.0, investigates which 4.0 technologies were used by companies and then verifies what is the level of difficulty encountered in their adoption, based on a Likert scale (from 1=little to 5=very much). The study wants to verify, again based on the previous Likert scale, how much the enabling technologies affect various aspects of the company, such as productivity, efficiency, time, worker safety, costs, etc. Finally, about the adoption of 4.0 enabling technologies, the survey asks whether jobs decrease as a result of their adoption.

The third section investigates the degree of Industry 5.0 development at company level. In the first analysis, the study verifies whether investments in circular solutions have been made within the responding company, asking to indicate which ones in case of an affirmative answer. Then, the responding companies indicate, based on the Likert scale set out above, the level of readiness of the responding company to make investments aimed at fulfilling the three founding principles of Industry 5.0, to probe the importance that companies give to these aspects. Finally, the last question of the second section, asks to indicate the difficulties expected concerning the implementation of the company values characterizing Industry 5.0.

In the fourth and final section of the survey, the focus shifts to staff recruitment challenges. It examines where and how staff are primarily sought, investigates the urgency of the lack of skilled technical personnel within respondent companies, and identifies the most-needed professional roles, to highlight the extent of the problem. Furthermore, it asks to specify which professional figure is most lacking and it explores the factors influencing the shortage and solicit solutions, including the potential effectiveness of technological implementation and increased automation in production processes.

The survey concludes by asking companies to indicate in which fields, as a result of technological implementation, more experienced workers are sought after and then asking them to specify in which field it is, on the other hand, more difficult to find competent workers.

To study the performance of the survey results, the study uses the software R, to lead three types of analysis, Principal Component Analysis (PCA), Correspondence Analysis (CA) and Multiple Correspondence Analysis (MCA), to simplify the understanding of the data.

The first PCA tests whether there is a correlation between two variables, namely the propensity to invest in circular solutions and the propensity to invest in business resilience, with a third variable, the cost of equipment.

The second PCA investigates the correlation between the propensity to invest in new technologies in production aimed at improving the working conditions of employees with possible man-machine interface problems and the cost of equipment.

The CA investigates the correlation between the 4.0 enabling technologies companies use with the fields in which the need for skilled personnel increases most because of the implementation of these technologies.

As a final analysis in R, the MCA tests the correlation between three different variables, namely the number of employees, the need or otherwise to find a solution to the problem of the lack of technical-skilled personnel and the 4.0 enabling technologies companies use.

The final analysis in R employs MCA to assess the correlation between three variables: employee numbers, the need to address the lack of technical-skilled personnel, and the utilization of Industry 4.0 technologies.

Qualitative analysis involves two semi-structured interviews to delve deeper into topics relevant to the Italian manufacturing sector. The interviews target one large and one smaller company to uncover differences in the challenges faced and approaches taken between large and small enterprises.

The first interviewed is the smallest one, with around 30 employees and located in the province of Como. Next, the largest one, with around 300 employees and located in the province of Varese, was interviewed.

The interviews are conducted online, dialoguing, in the case of the first company, directly with one of the owners and in the second case, with the HR managers and the production office manager.

The interview asks both companies to specify their motivations for investing in Industry 4.0 technologies and to explain the main difficulties they encounter in adopting these technologies. Next, the interview requests whether they considered the lack of skilled technical personnel to be more of a technical problem or more of a social problem and to explain how they try to counteract and mitigate the lack of personnel.

The interview ends with an in-depth discussion of Industry 5.0 topics (sustainability, resilience and human-centricity), through which possible future developments can be verified.

Results

Quantitative analysis results

The sample obtains 33 responding companies from the survey, out of a population of 250 (13.2%). It is important to specify that this sample reflects the characteristic of the Italian machine tool industry to be mainly concentrated in the Centre-North, in fact companies responding to the survey are mainly located in this area, specifically, 21 in Lombardy, 6 in Piedmont, 4 in Emilia-Romagna and 2 in Veneto.

Regarding the enabling technologies of Industry 4.0, those most used by the sample are cyber-security (57,6%), simulation (48,5%) and horizontal/vertical integration (36,4%). An encouraging figure is represented by the companies that do not use any of these technologies, i.e. only 3% of the sample.

The adoption of these technologies is complicated by two main factors: the lack of personnel, highlighted in 51.5% of responses with ratings between 4 and 5 on the Likert scale and the presence of inadequately trained operators, indicated in 27.3% of responses with ratings between 4 and 5 on the Likert scale.

However, such technologies improve certain production aspects, such as increasing product and process reliability (51.5% distributed between scores 4 and 5), as well as increasing customer satisfaction (45.5% distributed between scores 4 and 5). Anyhow, there is still a low increase in productivity (36.4% distributed between scores 4 and 5) and an even lower reduction in costs (30.3% distributed between scores 4 and 5).

Importantly, the use of these technologies does not lead to a reduction in jobs for almost the entire sample (96.9%).

The data shows a good level of attention towards the founding principles of Industry 5.0 (sustainability, resilience, human-centric); suffice it is to note that, as far as sustainability is concerned, 65% of the sample affirms that they make investments in circular solutions. Furthermore, 87.8% of the sample strongly supports the incorporation of new technologies to improve working conditions, 60% shows a positive inclination towards the adoption of circular models and energy efficiency, and 72.7% supports the willingness to make investments aimed at improving corporate resilience.

As far as the shortage of skilled technical personnel is concerned, it is a common problem in the Italian machine tool industry, with 75.8% of the sample considering it an urgent issue to be addressed. For 69.7% of the sample, inadequate practical training in high school is rather an impact on this problem, as is for 69.7% the lack of interest on the part of young people in the sector.

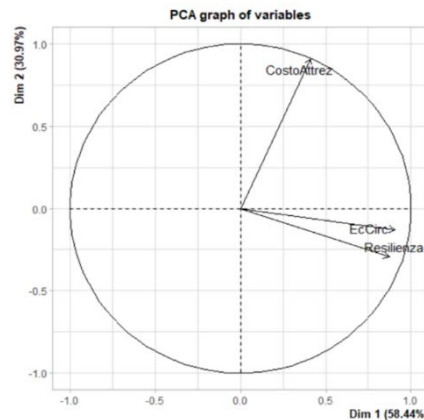
Interesting is the data concerning the increase in demand for operators because of technological implementation by the sample. Even though the field of mechatronics is still the one in which demand is greatest (81.8%), given the nature of the sector, there is an actual increase in demand for specialized figures in the fields of electronics (63.6%) and informatics (39.4%), which reflects the actual widespread use of technology. Despite, however, the increase in technology in production, most of the sample has great difficulty in finding specialized personnel in the fields characterizing the sector, namely mechanics (63.6%) and mechatronics (63.6%).

Furthermore, for 81.8% of the sample, increased automation in production processes cannot be a solution to the problem of the lack of skilled technical personnel.

The study presents now the results of the analysis carried out using the R statistical software.

The first PCA studies the correlation of two variables, namely propensity to invest in circular solutions and propensity to invest in business resilience, with a third variable, the cost of equipment.

Graph 1: PCA on circular economy, resilience, and equipment cost

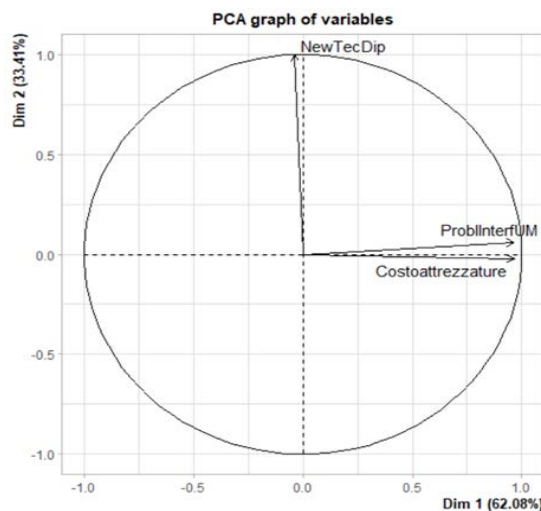


CostoAttrez = cost of equipment
 EcCirc = propensity to invest in circular solutions
 Resilienza = propensity to invest in business resilience

The graph shows a negligible correlation between the propensity to invest in circular solutions and the cost of equipment and between the propensity to invest in business resilience and the cost of equipment. This finding is based on the observation of the almost right angle formed by the corresponding vectors. However, a positive association emerges between the first two variables, indicating the tendency of companies to invest in both areas. This close relationship is corroborated by the acute angle formed by the vectors, indicative of a more robust correlation. Furthermore, the model can explain the variation of variables, as demonstrated by their position close to the circumference, especially in the case of the vector relating to the cost of equipment.

The second PCA is aimed at investigating the correlation between the propensity to invest in new technologies to improve employee conditions, with possible man-machine interface problems and the cost of equipment.

Graph 2: PCA on investments in new technologies for employees, human-machine interface issues, and equipment cost

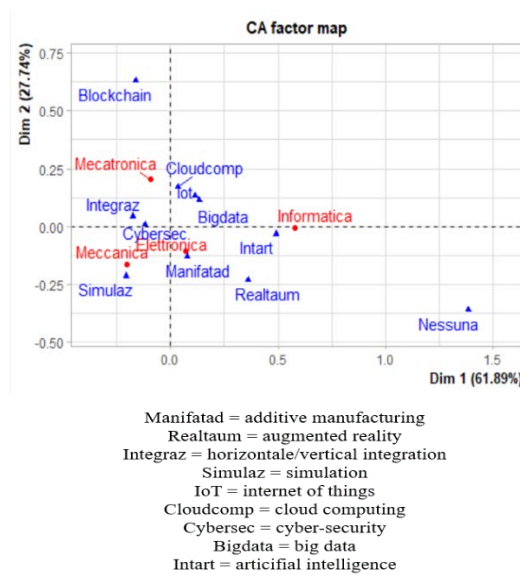


NewTecDip = propensity to invest in new technologies to improve employee conditions
 ProblInterfUM = man-machine interface problems
 Costoattrezzature = cost of equipment

The graph shows an almost zero correlation between the propensity to invest in new technologies to improve working conditions and the other two variables; in fact, the vectors form an almost right angle. Moreover, all variables are well explained by the model and show a high level of significance, given the high closeness of the three vectors to the circle.

The CA analyzes the correlation between the 4.0 technologies used by companies and the areas where there is a greater demand for skilled personnel because of the implementation of these technologies.

Graph 3: CA on enabling Industry 4.0 technologies used and fields where demand for personnel has increased the most

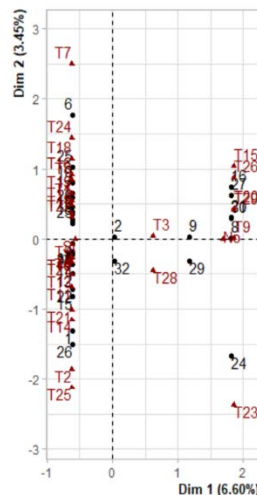


Companies that use simulation more, have a greater need for operators in the field of mechanics; companies that have implemented artificial intelligence, have a greater need for operators in the field of informatics. The field of mechatronics, on the other hand, is not close to any particular technology, in fact it is a useful skill for a variety of technologies. Additive manufacturing, finally, requires many skills in the field of electronics.

In addition, at the bottom right there is an outlier (None) that can be disregarded in the analysis; this is because, as there is only one individual who answers None, data can be considered not statistically significant.

The last type of analysis is an MCA, which aims to analyze the correlation between the number of employees of the companies, the need or not to solve the problem of the shortage of skilled technical personnel (Yes/No) and the 4.0 enabling technologies used. To facilitate the analysis, technologies data are grouped and simplified, as most companies use more than one. This is possible by naming all combinations of technologies used.

Graph 4: MCA on number of employees, presence or absence of the personnel shortage issue, and enabling Industry 4.0 technologies used

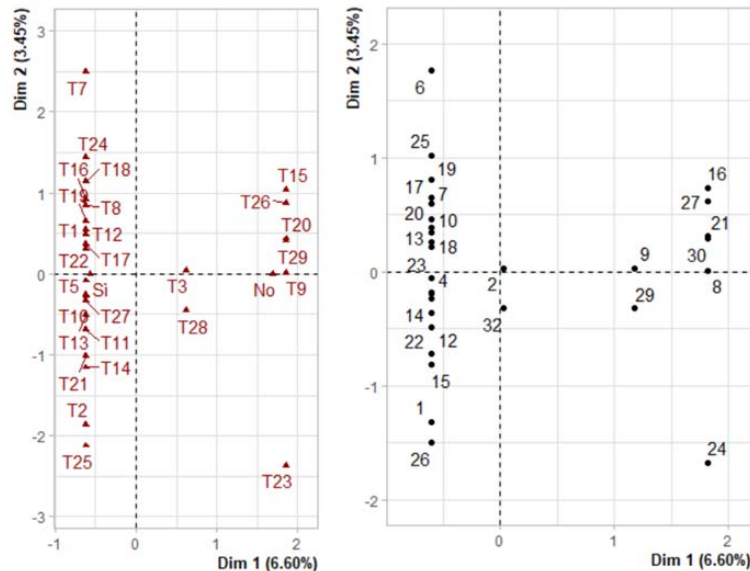


T1 = Simulation; T2 = Horizontal/vertical integration, simulation, cyber-security; T3 = IoT, cloud computing, cybersecurity; T4 = Additive manufacturing, simulation, cyber-security; T5 = Simulation, cloud computing; T6 = Simulation, IoT, cyber-security; T7 = Additive manufacturing, horizontal/vertical integration, IoT, cloud computing, cyber-security, big data, artificial intelligence; T8 = Horizontal/vertical integration, simulation, IoT, cloud computing, big data; T9 = Cloud computing, cyber-security, blockchain; T10 = None; T11 = Cyber-security; T12 = IoT, cyber-security; T13 = Simulation, IoT, big data; T14 = Cloud computing, artificial intelligence; T15 = Augmented reality, horizontal/vertical integration, simulation, cloud computing, cyber-security, big data; T16 = Horizontal/vertical integration, cloud computing, cyber-security; T17 = Additive manufacturing, cloud computing, cyber-security; T18 = Horizontal/vertical integration, simulation, IoT, cyber-security; T19 = Additive manufacturing, augmented reality, simulation, cyber-security; T20 = Additive manufacturing, IoT; T21 = IoT, cloud computing, cyber-security, big data, artificial intelligence; T22 = Horizontal/vertical integration; T23 = Artificial intelligence; T24 = Cyber-security, blockchain; T25 = Horizontal/vertical integration, simulation; T26 = Horizontal/vertical integration, cyber-security, big data; T27 = Horizontal/vertical integration, cyber-security; T28 = Horizontal/vertical integration, simulation, big data; T29 = Cyber-security, big data

There is a high concentration at Yes and little at No. This is a symptom of the fact that the use of technology can not solve the problem of the lack of skilled technical personnel; in fact, companies that massively use technology are in the vicinity of Yes.

Two additional graphs are presented to aid in comprehending the preceding graph: one presents the correlation between the answers Yes and No and the 4.0 technologies used, while the other shows the distribution of the number of employees of the companies in the sample. This clarifies the interpretation of the previous graph and avoids overlaps between the variables.

Graph 5: On the left, Graph 4 excludes employee numbers, while on the right, it omits the presence or absence of personnel shortages and the utilization of Industry 4.0 technologies



It is difficult to assume that there is a correlation between the number of employees and the perception of the shortage of qualified personnel as an imminent problem within companies; this is because the majority of companies answered Yes, regardless of the number of employees. However, while large companies are only represented among those who answered Yes, smaller companies are present among both those who answered Yes and those who answered No. This discrepancy could stem from a limited sample or from the tendency of Italian companies in machine tool sector to be predominantly small companies.

In summary, this MCA suggests that the adoption of the enabling technologies of Industry 4.0 does not significantly address the problem of the shortage of technical-skilled personnel.

Qualitative analysis results

The interviews conducted confirm many of the results of the survey.

First of all, both companies, which use 4.0 technologies, state that they invest in them to make production process more efficient.

Both companies identify the lack of specialized technical personnel as one the biggest problems in the sector and the use of technology, as well as the lack of operational training, and have repeatedly stressed the ineffectiveness of the Italian school system in preparing young profiles before they enter the labor market. In this regard, both are doubtful about the effective functioning of ITS and the school system in general, stating that they respond to this problem with in-house training. In addition, the lack of dialogue between companies and the institution emerges, which is, in most cases, almost completely absent, especially for smaller companies. In fact, the largest company claims to start collaborations, to reduce this dialogue gap, not only with ITS and with alternance training projects, but also with the Politecnico of Milan and Confindustria, offering additional training courses for interested students.

Both companies see an increased demand for more qualified personnel as a result of the implementation of technologies; the most difficult figures to find are IoT developers for the larger company and electronic technicians for the smaller one.

As far as corporate sustainability is concerned, both companies state that they make investments in energy efficiency; specifically, the larger company is starting an investment in photovoltaic panels, while the smaller company replaces its previous, outdated lighting system.

The larger company is available to discuss the other two 5.0 principles (resilience and human-centricity), demonstrating to realize their potential; it states that companies are beginning to understand that the heart of the company is the people who work there, and that conditions must therefore be created for every worker to feel comfortable within the work environment and with the technologies through which they work. The company also believes and affirms that this can generate strong benefits in terms of solid business resilience.

Discussions

The first observation that can be made is that there is still a low efficiency of technology utilization by the sector, since the productivity gains and cost reductions that should result from such investments are still low.

Important to specify, is that machine tool industry operates with increasingly technological machinery, but which requires extensive knowledge of the same; the operator and the machine must guarantee extremely high standards of precision and this makes the human contribution still fundamental (Angelopoulos et al., 2022). As a result, it is clearer to understand why jobs do not shrink after technological implementation, but how perhaps they adapt to new requirements.

As far as the topic of 5.0 is concerned, the paper outlined a situation that is, as can be expected, still poorly defined, as awareness of the paradigm within the industry is still low.

Despite this, a fair level of attention to the founding principles of the paradigm is observed; this lays the foundation for a possible future development of the paradigm within the field discussed here.

The result is that increased automation does not reduce the shortage of staff, but it can increase the need for preparation. At that point, the problem of under-prepared schools reoccurs and the need for in-house training continues.

Since the lack of specialized personnel is both a technical and a social problem, it is necessary to take action on several fronts; starting with improving education, increasing investments in automation and introducing an effective dual apprenticeship system, and ending with the introduction of work placement programs in schools, increasing facilities for introducing young people into the company and promoting technical-scientific university courses.

In conclusion, the shortage of skilled technical personnel is both technical and social. On the technical side, the absence of training institutions capable of adequately preparing young people and the implementation of the enabling technologies of Industry 4.0 are not definitive solutions to the problem, but rather accentuate the need for a more qualified workforce. On the social side, a real change in the attitude of young people towards technical professions emerges, accompanied by a lack of promotion of the sector by institutions. This leads to a limited knowledge of the real potential of the sector and, consequently, to a reduced availability of skilled personnel for professions that will be increasingly rare.

As far as the 5.0 paradigm is concerned, it is still almost completely unknown at the entrepreneurial level; however, there is a growing, albeit still unconscious, interest in the founding principles of Industry 5.0 (sustainability, resilience, human-centricity), synonymous with potential positive developments within the industry.

Research limitations. *The document has some limitations that make further analysis of the topics discussed here necessary.*

Firstly, the limitation related to the emerging Industry 5.0 paradigm should be highlighted; this new industrial approach, being still in its embryonic stage, is reflected in the limited availability of studies and the scarcity of consolidated literature on it.

A second aspect is the choice to focus the survey exclusively on the Italian machine tool sector; this restriction has the consequence of obtaining data that are only concentrated in the central and northern regions. Therefore, the results obtained may not fully reflect the complexity and dynamics of the Italian industrial scenery in the context of the transition from Industry 4.0 to 5.0. Future studies could deepen this issue through analyses conducted on different geographical areas.

Furthermore, mention must be made of the limitation resulting from the decision to focus the study exclusively on Ucimu member companies; this choice leads to a reduction in the variety of the sample. This reduced sample may not be representative of the entire population of companies belonging to the Italian machine tool sector, thus compromising the generalizability of the results obtained.

Managerial implications. *The first managerial implication of the following elaboration is that of the identification of recruitment challenges; companies need to be aware of the underlying causes of the difficulties in identifying and recruiting technical-skilled workers, to make decisions aimed at problem mitigation.*

The second implication is the identification of the development of targeted training programs as the way forward in reducing the problem; companies must invest in specific, targeted training programs to close the skills gap. Such programs must be designed to provide the necessary skills to meet the challenges of the transition from Industry 4.0 to Industry 5.0.

A further implication concerns the involvement of policymakers; companies must actively collaborate with them to influence policies and incentives that support industry transition. This implies being able to clearly communicate the industry's needs and provide input on training programs and industry development policies.

Originality of the paper. *The following study is distinguished by its relevance to the demands and directives of the European Union. In particular, it focuses on the concept of Operator 5.0, identified as the core of the production system, following the mandate of the European Union that identifies it as a priority, to ensure the sustainable competitiveness of enterprises. This approach is not merely an adaptation of existing guidelines, but represents a new perspective that focuses on the well-being of people (SDG 3 – UN, 2015), the promotion of decent work (SDG 8), the stimulation of business innovation (SDG 9), the reduction of inequalities (SDG 10) and the promotion of responsible consumption and production practices (SDG 12).*

In parallel, the paper recognizes and emphasizes the need to adopt an interdisciplinary approach to address the cultural change inherent in the transition to Industry 5.0. This is not only a pragmatic approach, but represents a

conceptual innovation that recognizes the complexity of the problems and the need for integrated solutions that transcend traditional sectoral boundaries.

Through an approach that combines quantitative and interdisciplinary elements, the study contributes to the development of theory regarding Operator 5.0 within the machine tool sector, a particularly relevant environment for the Italian market.

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Additive manufacturing: tecnologie umane e sostenibili per il benessere degli individui e della società

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LUIGINO FILICE⁴ ALFIO CARIOLA⁵

Abstract

Gli sviluppi tecnologici trasformano la società partendo dalle attività quotidiane. Negli ultimi anni sono state condotte numerose ricerche con l'obiettivo di innovare gli impianti medici utilizzati per la rigenerazione ossea e la guarigione dei tessuti corporei o più in generale per migliorare il benessere spinto anche dall'invecchiamento della popolazione. Questo lavoro esplora come nuove tecnologie afferenti all'additive manufacturing possano soddisfare alcune esigenze della società, considerando l'evoluzione tecnologica in una prospettiva incentrata sull'uomo. In questo quadro, emerge l'importanza di una revisione sistematica della letteratura, analizzando lo stato dell'arte unito agli aspetti concettuali e intellettuali. Viene proposta una nuova prospettiva teorica, basata sulla tecnologia umana, che considera l'interazione tra tre elementi principali: futuro delle tecnologie, benessere umano e bisogni della società.

Keywords: *human wellbeing; technological trajectories; biomedical implants; societal changes.*

Framing of the research. *La trasformazione digitale e gli sviluppi tecnologici influenzano profondamente ogni aspetto della vita di ogni individuo (Io et al., 2022). Infatti, esse trasformano le attività quotidiane e il funzionamento della società, compresi lo sviluppo economico, i processi lavorativi, i metodi di produzione e i modelli di consumo (Akbari et al., 2020). Secondo (Bernard, 1991), "la tecnologia è il mezzo e il processo attraverso il quale noi, come società, produciamo la sostanza della nostra esistenza". Essa comprende "strumenti, materiali, forme di energia, tecniche e organizzazione del lavoro". Questo approccio, però, non prende in considerazione alcuni aspetti legati al miglioramento della vita delle persone e al soddisfacimento di bisogni individuali e della società (Schivone & MacVaugh, 2009). Tra le diverse tipologie di bisogni (Maslow, 1954), sempre più spesso viene data priorità a quelli psicologici di base e universali, che comprendono la salute, il benessere e la qualità della vita (Deci & Ryan, 2000). Essi non sono cambiati nel corso della storia; ed è proprio lo sviluppo delle nuove tecnologie e la loro applicazione a garantire la creazione di nuovi prodotti e servizi funzionali al soddisfacimento di bisogni universali e non (Park et al., 2012; Bazan, 2019). La tecnologia e la società, infatti, sono due entità correlate, co-dipendenti e si influenzano l'una con l'altra (Appio et al., 2017; Si et al., 2020). Tuttavia, la società sta cambiando e bisogna tenere conto di nuove sfide (Kraus et al., 2021). Si pensi ad esempio al rapido aumento della percentuale di persone di età pari o superiore ai 60 anni, con un conseguente aumento dell'incidenza delle malattie, soprattutto nei Paesi più sviluppati; l'invecchiamento della popolazione genera anche un aumento dell'incidenza delle disabilità sia nei Paesi sviluppati che in quelli in via di sviluppo. Secondo i Centers for Disease Control and Prevention (CDCP), ogni anno negli Stati Uniti circa 54,4 milioni di adulti (circa il 22,7% della popolazione totale) ricevono una diagnosi di artrite, artrite reumatoide, infarti, ictus, lupus o fibromialgia. Quindi, sempre più persone hanno esigenze specifiche che devono essere soddisfatte attraverso dispositivi impiantari come pacemaker, stent o impianti ortopedici per lesioni agli arti, lesioni alla colonna vertebrale, disturbi articolari e difetti craniomaxillofacciali. Gli impianti in ambito medico, infatti, sono in aumento con previsioni che superano il 39% di nuova domanda entro il 2050 (Pabinger et al., 2018). In altre parole, la popolarità dei dispositivi medici impiantati è aumentata vertiginosamente e sono ampiamente accettati come possibile miglioramento della qualità della vita di milioni di persone in tutto il mondo (Global Market Insights, 2023). La maggior parte delle articolazioni artificiali o altri impianti funziona bene e rimane nell'organismo per lungo tempo, facendo emergere la necessità di controlli periodici. Il numero*

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sempre più ridotto di chirurghi disponibili per assistere questi volumi crescenti di pazienti rende, però, necessaria la riduzione del numero di procedure di revisione. Inoltre, gli impianti possono creare problemi a causa di infezioni e altre gravi condizioni legate all'ambiente corporeo (Zhai et al., 2023). Tuttavia, l'avvento di nuove tecnologie abilitanti come l'Additive Manufacturing (AM), le frequenti modifiche tecniche e/o produttive e i nuovi design degli impianti sono riusciti a migliorare la funzione e la longevità (Zhang et al., 2023). Infatti, data l'importanza della tecnologia, nell'ultimo decennio sono state condotte numerose ricerche per individuare nuovi metodi e nuove tecnologie avanzate (Qadir et al., 2018). Indubbiamente, negli ultimi anni sono stati compiuti molti progressi e i risultati sono soddisfacenti nel caso degli impianti ortopedici e dentali (Henkel et al., 2013). Dunque, la relazione tra lo sviluppo tecnologico, il benessere umano e la qualità della vita sta diventando un tema rilevante, nel field dell'innovazione e del management dell'innovazione, al fine di comprendere l'impatto della scienza sulla società. Nello specifico, è importante comprendere come l'avanzamento nell'applicazione di nuove tecnologie come l'AM possa seguire traiettorie sostenibili e incentrate sul rispetto dell'"uomo".

Purpose of the paper. Il presente lavoro si propone, dunque, di analizzare l'attuale stato dell'arte attraverso una Systematic-Literature-Review (SLR) che si focalizza sullo sviluppo di tecnologie nell'ambito dei dispositivi biomedici, con il fine di identificare le principali tendenze presenti e future. In questa prospettiva, l'analisi dei trend tecnologici è estremamente utile per arrivare a comprendere lo stato dell'arte e generare informazioni ad alto valore aggiunto sul benessere umano legato alla tecnologia (Canongia et al., 2004; Suh e Sohn, 2015). È proprio analizzando l'evoluzione tecnologica di impianti e protesi mediche che si possono acquisire conoscenze e capire come risolvere i bisogni di una società che cambia, esplorando nuove traiettorie (Dosi, 1982; Ittipanuvat et al., 2014). La qualità della vita è un fattore chiave per gli individui e per la società. Pertanto, lo sviluppo di nuove traiettorie tecnologiche può trasformare la vita di milioni di persone in tutto il mondo e i ricercatori, le aziende e i governi (a diversi livelli) sono chiamati a generare impatti positivi e sostenibili per risolvere i bisogni della società. La valorizzazione della conoscenza deve essere finalizzata alla gestione efficace ed efficiente delle risorse, ma soprattutto a creare un'elevata qualità della vita. Come afferma l'OMS, infatti: "La salute è un investimento, non un costo, la spesa per la salute è un investimento che sostiene la qualità della vita, la felicità e la prosperità"

Methodology. Per questo lavoro è stato scelto un approccio di SLR, rigoroso e pertinente, che produce conoscenza e aiuta a identificare tendenze, percorsi di ricerca e potenziali ricerche future (Kraus et al., 2020, 2022; Lim et al., 2022). Più in dettaglio, secondo Tranfield et al. (2003), la revisione sistematica si basa sui filtri che rendono il processo replicabile, consentendo di ridurre al minimo i "bias" nei risultati. Le principali fasi metodologiche suggerite da studi precedenti per sviluppare una metodologia di SLR, trasparente e replicabile possono essere riassunte nelle "3D" (Dumay, 2010). In particolare, la prima richiede la definizione delle domande di ricerca che rappresentano il passo preliminare nella conduzione di una SLR (Massaro et al., 2016). Il presente lavoro ha l'obiettivo di rispondere alle seguenti domande: quali sono i trend tecnologici nell'ambito della ricerca sui dispositivi implantari? Come le nuove tecnologie possono aiutare il cambiamento umano e sociale? Per rispondere a queste domande di ricerca, è importante progettare un protocollo di revisione, che risponde alla seconda D, per determinare gli articoli da includere per eseguire una ricerca completa del materiale. Seguendo linee guida relative al Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Moher et al., 2009; Page et al., 2021) per ridurre al minimo gli errori di interpretazione dei risultati degli studi raccolti, si è passati all'ultima D. Essa prevede lo sviluppo di un quadro di codifica. La metodologia scelta per l'analisi è quella bibliometrica (Kraus et al., 2022), che prevede una mappatura delle parole chiave, dei trend topic, delle co-occorrenze, delle tematiche e della loro evoluzione, delle co-citation e della bibliographic coupling. L'analisi documentale e bibliografica è stata condotta utilizzando la piattaforma Web of Science (Clarivate, 2023) per recuperare tutti i documenti rilevanti sull'argomento. La ricerca parte dal 1985 e arriva fino a fine 2023 per coprire lo sviluppo complessivo dalla pubblicazione del primo articolo sull'argomento. I record inizialmente identificati sono stati 9169 rappresentati esclusivamente da articoli di riviste scientifiche in inglese per identificare i lavori di interesse internazionale. Le categorie WoS non pertinenti riguardanti aree diverse a quelle strettamente legate ai temi in oggetto sono state escluse dalla ricerca, ottenendo un numero finale di 7166 paper. Per l'analisi dei dati sono stati utilizzati strumenti quali il pacchetto Bibliometrix (R-studio) utile per la ricerca quantitativa bibliometrica e di science mapping (Aria e Cuccurullo, 2017).

Results. Questo studio rappresenta uno dei primi tentativi di strutturare un quadro completo che descriva in dettaglio la configurazione delle componenti multidimensionali che dovrebbero essere considerate nello sviluppo di nuove tecnologie. Le revisioni sistematiche della letteratura giocano sempre più un ruolo cruciale nel sintetizzare i risultati delle ricerche passate per utilizzare in modo efficace la base di conoscenza esistente, far progredire le linee di ricerca e fornire spunti basati sull'evidenza nella pratica, oltre ad esercitare e sostenere il giudizio e la competenza professionale (Kraus et al. 2020; Kraus et al. 2022). Il lavoro si propone di capire se e come sia possibile considerare una prospettiva tecnologica basata non semplicemente sul progresso scientifico ma anche umano, orientato ad applicazioni sostenibili ed etiche. I risultati del lavoro dimostrano come lo sviluppo di nuovi dispositivi implantari basati sull'applicazione di tecnologie digitali e innovative può contribuire al cambiamento sociale, migliorando il benessere individuale e collettivo. Si evidenzia, infatti, un cambio di rotta. Si sviluppano sempre più tecnologie mediche che superano gli approcci tradizionali e affrontano un'ampia gamma di problemi di salute e sostenibilità, con un impatto significativo sulla vita degli individui e della società nel suo complesso (Garud & Ahlstrom, 1997; Ittipanuvat et al., 2014). Dal lavoro emerge che i recenti progressi nei biomateriali e le tecniche di produzione stanno rivoluzionando il campo degli impianti medici e anche la vita dei pazienti, offrendo nuove soluzioni promettenti e nuovi vantaggi per la vita umana. I dispositivi medici e le protesi, rappresentano un chiaro esempio di tecnologie applicate alle persone in quanto "esseri umani" (Rose, 1996).

. Si va verso un approccio che può essere definito di “Human Technology”. Infatti, il concetto di Human Technology può essere visto come l'orizzonte che esplora il rapporto tra l'uomo e la tecnologia, sia esistente che emergente e segna un punto di svolta importante, sottolineando il ruolo dell'uomo al centro di ogni applicazione tecnologica innovativa. Questo cambiamento è stato possibile grazie alle tecnologie abilitanti come l'AM che migliorano l'evoluzione aziendale e sociale, permettendo di riconvertire e riutilizzare le vecchie conoscenze all'interno di un nuovo mondo digitale, tecnologico e imprenditoriale.

Questi nuovi impianti e protesi prodotte con tecnologie innovative hanno delle peculiarità che li rendono diversi da quelli convenzionali: rappresentano molto di più di una pura sostituzione. Infatti, la digitalizzazione dei prodotti e dei processi “abilita” la tecnologia ad prospettiva umana favorendo una visione olistica che considera l'uomo nella sua interezza fisica e psicologia, piuttosto che una mera “sostituzione fisica” di un organo (Schiavone & Ferretti, 2021). C'è da sottolineare, infatti la precisione e la possibile personalizzazione dei prodotti finali. A differenza delle tecnologie tradizionali, che spesso impiegano approcci standardizzati, questi dispositivi basati su AM possono essere adattati alle esigenze del singolo paziente, ottimizzando i risultati del trattamento e migliorando l'esperienza dell'utente e la sua condizione psicologica. Quindi, attraverso l'AM è possibile creare impianti su misura che si adattano all'anatomia unica del paziente, migliorandone la funzionalità e riducendo il rischio di complicazioni. Inoltre, impianti su misura più durevoli e biocompatibili riducono la necessità di interventi di sostituzione, riducendo lo stress dei pazienti, ma anche i costi sanitari.

Prendendo in considerazione l'argomento sostenibilità queste soluzioni risultano essere biocompatibili e biomimetiche, imitando il più possibile le funzioni naturali del corpo umano. L'uso di biomateriali (progettati per interagire con i sistemi biologici) e lo sviluppo di nuovi materiali biocompatibili hanno portato a miglioramenti significativi nella durata e nella biocompatibilità degli impianti. Questo approccio riduce il rischio di reazioni avverse e migliora l'integrazione del dispositivo con i sistemi fisiologici del paziente. Le tecnologie tradizionali potrebbero non presentare questo livello di compatibilità, causando potenzialmente maggiori disagi o complicazioni. A differenza delle tecnologie tradizionali, che possono limitarsi a fornire un sollievo sintomatico, alcuni dispositivi medici e protesi moderne mirano a ripristinare o migliorare le funzioni perse. Si tratta di dispositivi che supportano la rigenerazione dei tessuti offrendo mobilità e destrezza, rappresentando una svolta significativa rispetto ai trattamenti convenzionali. Si tratta di applicazioni tecnologiche sostenibili dal punto di vista economico, sociale ed ambientale.

Un altro aspetto da sottolineare, riguarda l'integrazione tra tecnologie IoT (come sensori, analisi dei dati e connettività) e dispositivi medici/protesi basati su AM. Tale caratteristica consente monitoraggi in tempo reale, raccolta dati e gestione a distanza, favorendo un approccio più proattivo e personalizzato all'assistenza sanitaria. Gli impianti “Smart” sono progettati per monitorare e rispondere ai cambiamenti del corpo del paziente, rendendoli ideali per condizioni come il diabete o le malattie cardiache. Le tecnologie tradizionali sono in genere prive di tali funzioni limitando la loro capacità di adattamento dinamico alle esigenze del paziente. Anche l'ottimizzazione delle prestazioni nel tempo è possibile grazie a sistemi adattivi e di apprendimento, che consentono ai dispositivi di evolvere nel tempo. Con l'aiuto di algoritmi di apprendimento automatico è possibile analizzare i dati del paziente in modo da regolare le impostazioni del dispositivo per adattarlo meglio alle esigenze individuali e della società. Anche in questo caso, queste peculiarità non sono presenti nelle soluzioni tradizionali.

I dispositivi medici e le protesi stanno rivoluzionando l'assistenza sanitaria fornendo soluzioni più accurate, intelligenti e incentrate sul paziente rispetto alle alternative tradizionali. Con il rapido progresso della tecnologia, le possibilità di diagnosi, trattamento e riabilitazione sono in continua espansione (Gastaldi et al., 2018). Questo promette un futuro in cui l'assistenza sanitaria non solo sarà più efficace, ma anche adattata alle esigenze specifiche di ciascun paziente. Le tecnologie umane rendono la nostra vita facile, comoda, sana e piacevole e possono supportare gli esseri umani, ridisegnando processi e prodotti. In questo modo, la tecnologia migliora la nostra vita attraverso la sua continua evoluzione che si traduce in funzionalità sempre più avanzate (Cho et al., 2009).

La recente pandemia ha messo in luce la nostra dipendenza dalla tecnologia. Tuttavia, è emersa la necessità di creare tecnologie che abbiano una resa per l'essere umano più riconoscibile ispirando fiducia. Di giorno in giorno, l'esigenza di creare “tecnologie umane” diventa più forte e richiede una forte integrazione con l'etica. È innegabile che il rapporto tra uomo e tecnologia è caratterizzato da grandi opportunità che hanno posto le basi per il progresso tecnologico dell'umanità. Tuttavia, a differenza del passato, stiamo assistendo a un nuovo fenomeno che vede la tecnologia stessa adattarsi alle esigenze di chi la utilizza, umanizzandosi (Galimberti, 2009). Probabilmente, nel prossimo futuro, assisteremo a una rapida fusione tra uomo e macchina in cui la nostra umanità sarà “incorporata” nella tecnologia. Quello che stiamo vivendo è uno dei momenti più rivoluzionari della storia dell'umanità che pone la tecnologia al centro di un cambiamento epocale come strumento per migliorare le nostre capacità umane (Marchiori et al., 2022). Oltre ai cambiamenti funzionali nella vita quotidiana, le tecnologie umane hanno effetti sul benessere sociale ed emotivo. Migliorano le capacità fisiche, ma il loro impatto si estende alla sfera della salute mentale. Infatti, ripristinando la fiducia in sé stessi, promuovendo l'indipendenza, facilitando l'integrazione sociale, favorendo l'adattamento psicologico e ispirando un senso di possibilità, le protesi potenziano gli individui e contribuiscono al loro benessere mentale complessivo. È fondamentale riconoscere e dare priorità al profondo impatto che questi dispositivi hanno sulla salute mentale, consentendo alle persone di affrontare la vita al meglio.

Infine, i responsabili delle politiche sanitarie la prevenzione, l'autogestione e il trattamento delle malattie croniche come una sfida importante (Nolte & McKee, 2008). Di conseguenza, gli sviluppi tecnologici a favore della salute sono

sempre più posizionati nel contesto più ampio del sostegno a un invecchiamento attivo e sano e a una vita indipendente (Cabrera & Malanowski, 2009; Peine & Moors, 2015). Le nuove tecnologie consentono alle persone di evitare la stigmatizzazione sociale che, a sua volta, permette la loro integrazione sociale e la riduzione dei problemi emotivi legati a disabilità e carenze fisiche e psicologiche. Pertanto, la sfida dell'innovazione non risiede più solo nel potenziale economico, ma anche nei cambiamenti sociali; il processo innovativo sta evolvendo verso forme di co-sviluppo sempre più marcate. Il sapere scientifico e l'applicazione tecnologica devono essere sviluppati portando sempre il paziente “al centro”; questa rappresenta una traiettoria tecnologica con un forte impatto sociale e non solo economico (Ittipanuvat et al., 2014; Kwon & Park, 2018).

Research limitations. Questo lavoro non è esente da limitazioni. Infatti, si tratta di una prima analisi sistematica della letteratura che abbraccia più discipline, finalizzata a spiegare fenomeni altamente mutevoli. Future ricerche si stanno focalizzando sull'analisi brevettuale e sulle dinamiche competitive.

Managerial implications. I cambiamenti sociali richiedono agli individui e soprattutto agli attori aziendali di comprendere sia le esigenze tecnologiche che quelle sociali per generare l'innovazione. Le tecnologie richiedono una prospettiva umana nello sviluppo tecnologico; c'è bisogno quindi, di modelli di “co-sviluppo” che concilino il progresso tecnologico, quello umano e i bisogni della società (Schiavone & Ferretti, 2021). Ciò implica una transizione che cambia radicalmente lo scenario dell'innovazione, determinando l'erosione dei classici principi guida del business basati sull'orientamento a breve termine con obiettivi di mero profitto. Questo richiede lo sviluppo di un nuovo approccio al business, dettato da un cambiamento globale verso una tecnologia umana che supporta il benessere collettivo. Di conseguenza, le imprese che applicano le nuove tecnologie proponendo nuovi prodotti/servizi/processi devono riconfigurare la loro value proposition (cosa viene offerto) e rimodellare il business model (Berman, 2012; Weill & Woerner, 2013; Metallo et al., 2018), proponendo nuove dimensioni del “valore”. Quindi, accanto al valore economico e contabile, si devono promuovere nuove dimensioni che includono l'etica e la sostenibilità (Fasbinder, 2010; van Noort, 2012). Lo studio, dunque, propone una visione sia tecnica che manageriale, fornisce una SLR multidisciplinare e offre anche una discussione approfondita sulle questioni manageriali che le aziende dovrebbero affrontare nel prossimo futuro.

Originality of the paper. Sebbene la letteratura sull'argomento sia in espansione, soprattutto in termini di prospettiva tecnologica, nessuno studio ha offerto una prospettiva multidisciplinare incrociando la letteratura tecnico/ingegneristica con quella di management (Shichman et al., 2022; Subbiah Ponniah et al., 2023). Il nostro studio propone un esame delle traiettorie tecnologiche nel campo degli impianti e delle protesi biomediche per capire se e come l'evoluzione tecnologica si muove verso una prospettiva incentrata sulla creazione di valore e non di profitto (Kwon & Park, 2018). La comprensione del topic dal punto di vista tecnologico e di business è fondamentale poiché offre spunti di ricerca futuri finalizzati ad analizzare la struttura dell'industria e del settore, anche attraverso lo studio della letteratura brevettuale (Bhat, 2005).

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Well-being in the transition from Industry 4.0 to Industry 5.0

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Abstract

The Industrial Revolution marked the evolution of society through technological development and the introduction of innovations. In the current scenario, we are experiencing a coexistence of two revolutions. The first, Industry 4.0 focused on the automation and digitization of production. The more recent, Industry 5.0 is oriented towards the centrality of human beings' production processes and in general in the development of a sustainable society. Both revolutions have brought value growth, primarily to companies, to the global economic system and society at large by improving work, employment and general creating well-being. The purpose of this research work is to analyse how Industry 4.0 and Industry 5.0 contributed and continue to contribute to well-being creation. Field, output and technologies involved in well-being creation will be investigated with a systematic literature review and a content analysis highlighting contact points and differences between the two revolutions and the evolution of the scenario at this time of transition. Managerial implications and limitations are included in the analysis.

Key words: Industry 4.0; Industry 5.0; well-being; transition; systematic literature review; content analysis.

Framing of the research. Industrial revolutions have historically initiated radical processes of change and development in production systems, labour dynamics and society as a whole (Xu et al., 2018; Sharma and Sing, 2020). Each revolution has brought new opportunities, introduced new technologies and placed new challenges and demands on society (Boninsegni et al., 2022). This has all contributed to the creation of new levels of prosperity but has also revealed weaknesses and difficulties in applying and integrating human beings and technological innovations above all (Koc and Teker, 2019). In the current economic and social context, we are witnessing the coexistence of two industrial revolutions (Leng et al., 2022). The first one, Industry 4.0, which has been underway since around 2010, has now reached a wide application and internalisation from the business to the social context. The second, Industry 5.0, has recently started a process of revision of the previous paradigm aimed at affirming the centrality of human beings and social sustainability at the core of technological development (Nahavandi, 2019; Breque et al., 2021).

The impacts of the two revolutions have been at the centre of scientific debate, for years with the topic of Industry 4.0 and more recently in Industry 5.0 perspective (Xu et al., 2021). Numerous aspects and areas were analysed and the contributions of the two revolutions were assessed (i.e. production efficiency, sustainability, performance, etc.), including the study of the possible impact in terms of well-being creation (Hanefah, 2018; Kadir and Broberg, 2020).

Well-being can be considered a multifaceted and complex concept (Halbreich, 2022) often associated with innovation and technological development, even in a controversial way (Orben and Przybylski, 2019). The concept of well-being is derived from the combination of a set of factors such as prosperity or quality of life, and quality of social relations, referring to the mental, physical, economic or emotional sphere of the person (Fletcher, 2016). Well-being can thus be considered in the sphere of the worker, in that of the consumer and/or citizen, and in that of the natural environment, opening up different scenarios that from the individual allow one to consider the perspective of society as a whole and thus of general well-being (Kadir and Broberg, 2020).

In this context, the two revolutions have and are currently making their contribution to creating favourable conditions for the implementation of well-being dynamics (Xu et al., 2021). Often, the focus of studies in this lens is based on the enabling technologies of the two revolutions, which are considered the operational tools driving the evolution and changes taking place, including those concerning well-being (Zizic et al., 2022).

In this context, the literature is beginning a debate comparing the two revolutions, starting to investigate the foundations of well-being and the dynamics of creation (Xu et al., 2021). This extended abstract aims to fit into the current scientific debate by attempting to focus on the characteristics of well-being between the two industrial revolutions and in a transitional perspective.

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Purpose of the paper. Starting from the literature analysis, the extended abstract aims to analyse how Industry 4.0 and Industry 5.0 have contributed and continue to contribute to well-being creation. Field, output and technologies involved in achieving well-being will be investigated to analyse points of contact and differences between the two revolutions and to understand the evolution of the scenario in this time of transition.

Methodology. The analysis was conducted through a systematic literature review and a subsequent content analysis of the selected papers (Abatecola et al., 2013). The systematic literature review was implemented following the methodological scheme proposed by Mayring (2004) and Denyer and Tranfield (2009). Four analysis steps enabled the selection of the sample of papers to be investigated using content analysis: materials collection, descriptive analysis, categories selection and analysis of sample materials. The papers were extracted from the Scopus database, considered one of the most relevant and comprehensive databases internationally in management studies (Newbert, 2007; Merli et al., 2018; Sassanelli et al., 2019). Two different searches were implemented: the first using the keywords “Industry 4.0” and “well-being” (266 papers have resulted from the research), the second “Industry 5.0” and “well-being” (109 papers). The results were filtered by considering papers in the areas of “business, management, accounting”, “social science” and “decision science” (91 papers in the field of Industry 4.0 and 42 papers in Industry 5.0). Subsequently, only papers in English published in Journals with peer review were selected to increase the reliability of the information (39 papers and 20 papers). Finally, the abstract reading with an inclusion/exclusion approach, made it possible to exclude papers that were not significant about the research objective (29 papers and 18 papers). The final papers (47 papers) were downloaded and analysed in an organised Excel database to extract general information (i.e. year, journal, methodology) and to start the content analysis (Mayring, 2004). Table 1 summarises the outline of the methodology.

Table 1 - Methodology outline

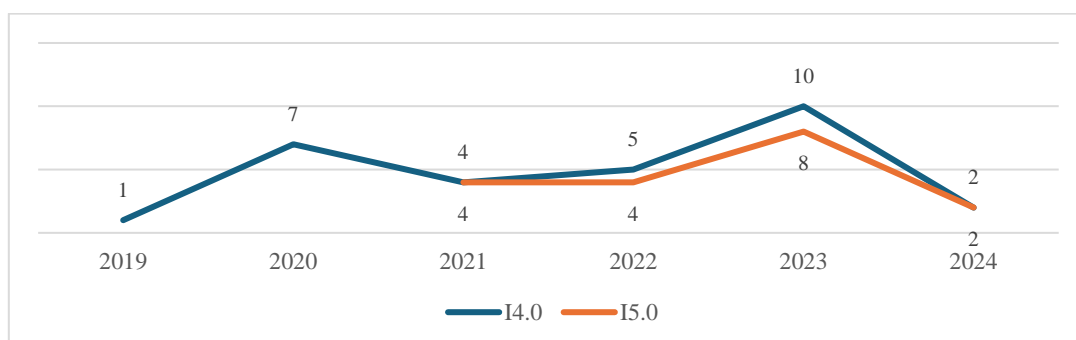
Sistematic review step	“Industry 4.0” + “well-being” n. papers	“Industry 5.0” + “well-being” n. papers
Keyword search	266	109
Subject area selection	91	42
Paper characteristics selection	39	20
Abstract reading	29	18
Total	47	

Source: Author elaboration

Results. The analysis of the results was divided into two sections. In the first one, the general aspects of the papers were analysed to understand their characteristics and evolution over time (year of publication, journal and methodology). In the second section (by the application of content analysis), the specific research aspects of the individual papers were investigated about: field, output and technologies involved in achieving well-being.

The analysis of the publication time frame shows a concentration of articles in the years 2021-23 (Figure 1).

Figure 1 - Publication trends



Source: Author elaboration

From the point of view of the methodology used, we can say that 70% of the papers are empirical and thus bring concrete validation of the considerations regarding the two revolutions and the well-being created. Regarding the editorial placement of the papers, for Industry 4.0 we find among the journals with the most recurrences: Sustainability (4 papers, 14% of the sample), International Journal of Production Research (3 papers, 10%), International Journal of Industrial Ergonomics (2 papers, 7%) and Technology in Society (2 papers, 7%). The remaining papers (18 papers) are placed in journals dealing with production, environment, and quality. However, regarding papers on Industry 5.0, a prevalence of recurrences emerges in the journals: International Journal of Production Research (3 papers, 17% of the sample), Systems (3 papers, 17%) and Sustainability (2 papers, 11%).

The second section of results, which emerged from the content analysis of the selected papers, provides information on the field, output and technologies involved in achieving well-being.

Table 2 shows where, according to the literature, the two industrial revolutions are read in terms of well-being creation.

Table 2 - Industry 4.0 and 5.0 well-being field results

Industry 4.0	n.	%	Industry 5.0	n.	%
Industry in general	5	17%	Production	7	39%
Production	5	17%	Firms organisation	4	22%
Society in general	5	17%	Society in general	3	17%
Firms organisation	4	14%	City	1	6%
Education	3	10%	Maritime Industry	1	6%
City	2	7%	Agriculture Industry	1	6%
Supply Chain	2	7%	Supply Chain	1	6%
Aviation Industry	1	3%	Total	18	100%
Ittic Industry	1	3%			
Tourism Industry	1	3%			
Total	29	100%			

Source: Author elaboration

Industry 4.0 seems to lead to well-being both in the industrial sector in general (i.e. Reiman et al., 2021; Cierniak-Emerych and Golej, 2020) and in companies about production (i.e. Alves et al., 2024; Lind et al., 2023) and related processes (Blandino et al., 2023), even in specific areas e.g. tourism (Gani et al., 2023). It also supports well-being in society in general as well as in specific areas (e.g. cities and education) (Abulibdeh et al., 2024).

Industry 5.0 on the other hand seems to give a boost to well-being starting from the enterprise, not only in production (i.e. Narkhede et al., 2024) but in the redefinition of business organisation (Galvan-Vela et al., 2021; Vijayakumar and Sobhani, 2023), especially as a result of the new technologies introduced (see Table 4 and related commentary). Here too, specific sectors emerge where the authors highlight the contribution to well-being (i.e. agriculture) and a general impact on society (Ferreira et al., 2022; Žižek et al., 2021). This initial analysis shows how welfare creation is associated with the two revolutions in both general and specific areas, suggesting different beneficiaries and different meanings of this.

The second level of analysis allows a detailed approach to well-being by trying to investigate its characteristics, i.e. how it is concretely expressed and what output it yields in the areas that emerged previously.

Table 3 shows how the prosperity created by the Industrial Revolution is interpreted and where it resides.

Table 3 - Industry 4.0 and 5.0 well-being output results

Output - Industry 4.0 and well-being	n.	%	Output - industry 5.0 and well-being	n.	%
Working conditions	19	65%	Working conditions	10	56%
Living conditions	4	14%	Environmental and social issues	4	22%
Environmental and social issues	6	21%	Living conditions	4	22%
Total	29	100%	Total	18	100%

Source: Author elaboration

In the case of Industry 4.0, its application has led to well-being which can be interpreted as a substantial improvement in working conditions. In this case, the considerations emerge from the companies and the advantages of the innovations of the fourth revolution brought to workers. The first aspect that emerges is the consideration of well-being as a reduction of work stress (Apraiz et al., 2023; Blandino, 2023; Dobrowolska et al., 2022). Industry 4.0 seems to have created the conditions for an effective improvement of the working environment, entrusting repetitive and thoughtful tasks to machines, contributing to enhancing system efficiency while at the same time implementing worker well-being (Slama et al., 2023). Koropets and Tukhtarova (2021) state how this improvement is also strengthened by an increase in jobs linked to innovation. This well-being is also qualified as mental (Cierniak-Emerych and Golej, 2020) and psychological (Alessio et al., 2019) and is generally linked to the sphere of the worker's health in particular of the ageing workforce (Alves et al., 2024). Kolot et al. (2020) talk about the social quality conveyed by Industry 4.0 as the ability to increase well-being and clarify one's potential, therefore also contributing to the growth of workers' awareness of their abilities and skills (Reiman et al., 2021). From an organizational point of view, Industry 4.0, together for example with Lean Manufacturing, jointly influences the concepts of Job Enlargement and Job Enrichment, creating the basis for greater efficiency and worker satisfaction (Cimini et al., 2023).

As regards Industry 5.0, also in this case the well-being created primarily reaches workers and the working environment. This aspect is certainly strengthened by the underlying logic of Industry 5.0, the centrality of man, from which a true human-centred workplace design philosophy derives (Ashta et al., 2023). Attention is focused not only on practical working conditions but emotional aspects also come into play, "emotional intelligence" for example, which is

considered a true soft skill (Chin et al., 2021). The well-being of the worker is certainly driven by the numerous and interactive new technologies (i.e. Cobots) that allow us to work alongside humans, support them but not replace or demote them (Nourmohammadi et al., 2022).

In equal measure, between the two revolutions, well-being emerges as an improvement in living conditions. This is often associated with the strong interactivity and involvement of the innovations introduced, capable of improving the Indoor environment (Broday et al., 2023) of the daily life of each individual, even going into detail about certain categories such as students (Rochin Demong et al., 2023).

Finally, environmental and social issues are the other results in which the well-being created by the two revolutions is expressed to an almost comparable extent. For instance, well-being is understood as strengthening food security, improving the performance of electricity infrastructure, enabling citizen involvement and participatory adaptation as well as reducing the impact of climate risks (Balogun et al., 2020).

The last level of analysis allowed us to focus attention on the specific enabling technologies of Industry 4.0 and the emerging ones of Industry 5.0 which are considered by the authors as supporters of the creation of well-being.

Table 4 shows the technologies that emerged from the analysis of the two revolutions. Not in all papers is there a specific technology to which the creation of prosperity can be linked, in some cases the reference is only general to the industrial revolution examined.

Table 4 - Industry 4.0 and 5.0 technologies involved in well-being

Technologies I4.0 involved in well-being	n.	%	Technologies I5.0	n.	%
Artificial Intelligence (AI)	3	20%	Automated Guided Vehicles (Agvs)	1	13%
Cyber-physical systems (CPS)	2	13%	Cobots	1	13%
Internet of Things (IoT)	2	13%	Exoskeletons	1	13%
Smart manufacturing	2	13%	Pick and Transport Robot (PTR)	1	13%
Blockchain	1	7%	Big Data	1	13%
Lean manufacturing	1	7%	Augmented Reality (AR)	1	13%
Machine Learning (ML)	1	7%	Internet of Things (IoT)	1	13%
Motion capture (MOCAP)	1	7%	Others	1	13%
Virtual Reality (VR)	1	7%	Total	8	100%
Smart Tourism Technologies (Stts)	1	7%			
Total	15	100%			

Source: Author elaboration

In the case of Industry 4.0, a technology that is in some cases associated with well-being is AI. AI is associated both with worker well-being and as a support for environmental and social issues (Murugesan et al., 2023; Abulibdeh et al., 2024). IoT as well as CPS, thanks to their sharing and interoperability capabilities, also allow substantial improvements in terms of safety, risk prevention and ergonomics (Velasco et al., 2022).

In the case of Industry 5.0, although we are still in the initial phase of studying this revolution, technologies oriented towards collaboration between man and machine are already emerging. For example, Cobots, are collaborative robots, which can improve the productivity and well-being of workers by determining the optimal allocation of tasks and available resources (Nourmohammadi et al., 2022) and at the same time monitor the working conditions and the state of mind of the worker to issue alerts and prevent problems (Storm et al., 2022). Automated guided vehicles (AGVs) can also facilitate collaboration between man and machine, bringing man to the centre of the system and improving performance and employee well-being (Thylén et al., 2023). Thanks to these tools and others (i.e. exoskeletons) it is possible to create a personalization of the working environment, improving workforce well-being and capabilities (Ashta et al., 2023).

It is clear from the analysis of the results that both Industry 4.0 and Industry 5.0 have contributed and are continuing to fuel the well-being creation process at various levels, both for companies and for society at large. The well-being highlighted by the authors is concretely linked to the sphere of the worker, but not only. Indeed, we have a propagation of the effects of the Industrial Revolution under consideration to citizens, students and cities as a whole. The scope of innovations and their beneficial impact is strongly linked to companies and their production processes in the Industry 4.0 paradigm, and, starting from the workers it spreads to the society at large with the Industry 5.0 model. Although the latter revolution is just getting underway and being studied, the contributions of some new enabling technologies to the overall well-being of business, workers and society are already clear. The transition from Industry 4.0 to Industry 5.0 seems to have this focus on human beings as a guiding thread, which is much more pronounced in the new 5.0 scenario and reinforced by the clear statement of sustainability as the cornerstone. Therefore, well-being is confirmed as an aspect linked to the two revolutions and driving the transition to Industry 5.0. Well-being is not always stated but implied and strongly connected with innovation and technology. Statically analysing the results that have emerged from the two revolutions, both seem to have as a more or less explicit objective the creation of wealth. In a dynamic vision, however, Industry 5.0 will, in our opinion, have to go more and more into the details of the components and determinants of well-being with a view from the particular to the specific and vice versa, trying to monitor needs and prevent needs. The switch of the logic is determined; society passes from the adoption of technology to improve production efficiency to the adoption of technology to multiply the perceived well-being inside and outside the companies.

With these transitional dynamics, the new Industry 5.0 scenario can aspire to be seen as an evolutionary step towards the '6.0 Wellbeing Society' (Žižek et al., 2021), where people will be able to define the parameters of their quality of life and achieve them thanks to innovation and increasingly widespread enabling technologies.

Research limitations. The limitations of this extended abstract should be considered and evaluated. From the point of view of methodology, the choice of keywords can be considered a limit. Indeed, the selection of words, while limiting the analysis to the specific issue, may not take into account the synonyms used by some authors (e.g. Fourth Industrial Revolution) and thus limit the analysis. In addition, findings emerge in this research that link Industrial Revolutions to well-being always in a positive sense. An extension of the research could consider the negative and/or controversial aspects of innovations to create a comprehensive view of the phenomenon. Moreover, the research work is, at this stage, merely conceptual and therefore lacks empirical validation of some of the considerations that emerged.

Managerial implications. This study endeavours to offer a theoretical contribution by methodically reviewing and critiquing the literature on well-being throughout the First and Second Industrial Revolutions, scrutinizing its distinctive features and exploring the influence of technological advancements on fostering well-being. From a management perspective, the analysis seeks to stimulate contemplation among corporations, institutions, and, on a broader scale, policymakers, regarding how these industrial transformations and the ongoing shift are contributing to well-being enhancement. A detailed examination of the intersections between Industry 4.0 and 5.0 with well-being reveals the innovation potential and its capacity to augment the systems' effectiveness and efficiency.

More explicit knowledge of the expected output of innovation can drive investment choices in equipment, company reorganisation or human resources and skills. Moreover, although what emerges from the literature is not very detailed, knowing the role of individual enabling technologies in supporting well-being and understanding their transition between the two revolutions could address managerial choices as well as institutions in creating supports and incentives for the adoption of such tools to achieve widespread well-being, from the workplace to society as a whole. I5.0 could lead to new managerial practices that should consider technology as a useful tool for freeing up workers' time and transforming work activity into an additional opportunity for building the social life of individuals. At the same time, new business strategies and market relations could arise where competition should be generated on the ability to create well-being in companies and society.

Like every innovation, I5.0 and further evolutions present some emerging limitations. First people involved directly or indirectly are continuously producing data useful for main internet and high-tech companies and, consequently, they can concentrate their power on markets and societies. Secondly, people may be increasingly connected to technologies and may increase their dependence on the internet and machines, further limiting their ability to appreciate well-being outside of these contexts.

Originality of the paper. The extended abstract deals separately and comparatively with the issue of well-being in the two Industrial Revolutions. The originality lies in the attempt to provide a holistic and evolutionary view of the concept of well-being creation in the two moments and frameworks that coexist today, Industry 4.0 and Industry 5.0. At the same time hypothesizing development trends in this transition phase.

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Employee well-being in the era of hybrid work: In search of sustainability for organizational members

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Abstract

Employee well-being is a multidimensional concept that companies globally are increasingly taking into consideration in their search for a sustainable business. Addressing the issues related to employee well-being has become more complex because of the rise of remote working, which today is permanently adopted by a large number of companies through hybrid work models.

The purpose of this study is to explore how Italian companies address the issues related to employee well-being, which practices they implement to sustain it, and if and how they perceive and face the challenges that remote working creates for employee well-being through specific interventions.

The empirical study is based on the accounts of managers from 10 Italian companies. Qualitative data were collected from 10 interviews carried out between July and October 2023.

Findings show that Italian managers have a multifaceted understanding of employee well-being, with a focus on physical and psychological well-being, and are aware of the influence of management style, which is linked to a workplace dimension of well-being, on the overall level of well-being. Companies in the sample implement a broad spectrum of initiatives and practices, mainly devoted at addressing physical, psychological, and life well-being, where the latter relates to work-life balance and family happiness. Regarding the challenges that remote working creates for employee well-being, companies appear to be only partially active in addressing them.

While the study is at its preliminary stage and the number of companies involved does not allow to make any generalizations, these evidence-based insights can be a solid base for designing a more comprehensive study.

The findings of this study suggest managers to look at employee well-being in a multifaceted way: they should take care of the workplace, physical, psychological, life, and social components of employee well-being by implementing specific practices devoted to sustaining each of them. Moreover, managers should pay specific attention to addressing the risks for employee well-being introduced by remote working: professional and social isolation, as well as blurring boundaries between work-life and private life when working from home.

While it explores Italian companies' approach to employee well-being, this study offers insights regarding the initiatives and practices that organizations are implementing to mitigate the negative effects of remote working on employee well-being in the post-pandemic era, when hybrid work models are becoming permanently adopted.

Key words: *employee well-being; employee health; remote working; hybrid work models; well-being practices; sustainable workplaces.*

Framing of the research. *Employee well-being is a multifaceted concept that has been studied from several perspectives. From an organizational perspective, Zheng et al. (2015) distinguished three dimensions of employee well-being: workplace well-being, life well-being, and psychological well-being. Workplace well-being includes work-related elements, such as compensation and benefits, labor protection, logistics service, management style, and work arrangements. Life well-being and psychological well-being refer to dimensions related to work-life balance, family happiness, emotional health, personal growth, and environment mastery. This means that managers should not only focus on employees' job satisfaction but also show genuine concern for employees' life well-being and psychological well-being when addressing this topic overall.*

Similarly, from a management perspective, Grant et al. (2007) notice that employee well-being cannot simply be viewed as job satisfaction or the overall quality of an employee's experience and functioning in the workplace. In their

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vision, it encompasses three components: psychological, referring to subjective experience and functioning; physical, referring to bodily health and functioning; social, referring to relational experience and functioning.

In the management stream of studies, differently Danna and Griffin (1999) distinguish well-being and health. Well-being comprises life and non-work satisfaction enjoyed by individuals (i.e. satisfaction with social life, family life, recreation, spirituality) together with work and job-related satisfaction (i.e. satisfaction with pay, promotion opportunities, the job itself, co-workers), while general health refers both to mental or psychological health and physical health within a more medical context (e.g. reported symptomology or diagnosis of illness or disease). Therefore they suggest that the term health should be applied to organizational contexts when specific physiological or psychological indicators are of interest, while well-being should be used as appropriate to include context-free measures of life experience (e.g. life satisfaction) and generalized job-related experiences, such as job satisfaction or job attachment, as well as more facet-specific dimensions, such as satisfaction with pay or co-workers.

In sum, literature proposes different models and constructs of well-being: while the psychological and physical components are typically included, other dimensions vary. Some authors put the accent on elements more related to the organizational context and to life well-being, others underline the role of social well-being experienced in the relational realm of the organization. Finally, some authors propose to differentiate employee well-being from employee health when mental or psychological health and physical health are concerned within a more medical context.

In recent years, the Covid-19 pandemic made organizations and society at large re-discover the importance of well-being and underlined the relevance of mental health and the social component of employee well-being, in a moment when the recourse to remote working suddenly increased in numerous organizations.

With reference to Italy, several studies were conducted to investigate the effects of remote working on employee well-being and productivity during the pandemic (e.g., Biasi et al., 2022; Molino et al., 2020; Spagnoli et al., 2020; Toscano et al., 2020). Biasi et al. (2022) showed that in the first phase of Covid-19 pandemic employees involved in the study reported perceptions of higher productivity while remotely working, even if results show that, for the period under investigation, remote working did not affect productivity. Their study also showed that remote working had consequences on personal well-being that differed among genders, with especially women struggling to reconcile between professional and personal needs. Spagnoli et al. (2020) focused on two counter-effects of remote working experienced by employees during the pandemic, namely: workaholism, the tendency to work excessively hard and to be obsessed with work; and technostress, the stress experienced by end users in organizations as a result of their intensive use of ICTs. Their study underlined the moderating role of leadership on such risks for remote employees. Similarly, Molino et al. (2020) confirmed the negative effects of technostress on employee well-being during the pandemic, and alerted about the “always on” working practice encouraged by remote working, which challenges employees in terms of mental and physical fatigue. Toscano et al. (2020) showed instead the deleterious role of social isolation for employee stress.

Regarding the consolidation of hybrid work contexts after the pandemic, Mazzei et al. (2023a) underlined the risk of a deterioration in the relational realm of the workplace. In a second study specifically focused on newcomers, Mazzei et al. (2023b) alerted that workplace social isolation due to remote working can reduce the efficacy of the onboarding process for new employees.

In other national contexts, with reference to Australian employees, Franken et al. (2021) explored the challenges associated with working remotely and resources for well-being and productivity. Most employees involved in the study expressed their feelings of happiness and satisfaction while working flexibly from home, but a number of them reported feeling overwhelmed and stressed about the heightened and competing demands, as well as isolated, both personally and professionally. Professional isolation caused a diminished sense of trust in co-workers and managers to accomplish their job responsibilities. Other stressors emerged concerning childcare responsibilities and managing the distraction of partners.

Ambivalent results regarding the effects of remote working on employee well-being and productivity emerged also from the meta-analyses conducted by Charalampous et al. (2019) and Ferrara et al. (2022). On the one hand, the study conducted by Charalampous et al. (2019) highlights that, while there is a general positive effect of remote working on employees' emotions, job satisfaction, organizational commitment levels, and autonomy, there is also a risk of social and professional isolation and perceived threats to professional advancement. On the other hand, the study conducted by Ferrara et al. (2022) reported that remote workers show higher positive affective well-being and higher happiness especially when they are highly resilient, but mixed results emerge on the role of teleworking on work-life balance. These results show that the perceived well-being levels when working remotely are influenced by the ability to manage the boundaries between work-life and private life. The authors of both these studies suggest that this heterogeneity can be influenced by the employees' characteristics as well as the organizational context and culture's characteristics.

Considering the increasing diffusion of hybrid work models, Hopkins and Bardoel (2023) proposed five pillars for successful hybrid work following a qualitative study on HR managers in Australia. These five pillars refer to operations, culture, communication, well-being, future skills, and technology. With specific reference to well-being, Hopkins and Bardoel recalled the relevance of dealing with mental health and well-being when remote workers are concerned. First of all, this implies an effort by managers to regularly check the well-being of their team members. Organizations can also implement specific initiatives to sustain psychological, physical, and social well-being: for instance, mental health aid specifically focused on dealing with remote working issues, initiatives to ensure remote employees have ergonomically compliant home office setups, training virtual exercise classes or challenges (e.g., daily step count), virtual team lunches and coffee breaks, online quizzes, book clubs, and movie nights.

Purpose of the paper. *Well-being is becoming an increasingly important topic on the agenda of companies worldwide due to the greater sensitivity that people pay to this aspect in relation to their job after the pandemic, when employees especially experienced new or exacerbated mental health issues. Moreover, the hybrid working models that companies today are largely adopting generate new challenges for employee well-being due to remote working. Therefore, the purpose of this study is to explore how Italian companies address the issues related to employee well-being today. First, it investigates what Italian companies mean for employee well-being. Second, it explores the practices they implement to sustain the well-being of their employees. Third, with reference to the spread of hybrid work models, this study also examines if and how Italian companies perceive the challenges that remote working creates for employee well-being and how they possibly face these challenges through specific interventions.*

Methodology. *This exploratory study (Yin, 1994) was guided by three research questions: 1) How do Italian companies address the issues related to employee well-being? 2) What practices do they implement to sustain it? 3) Do they recognize the challenges that remote working poses to employee well-being and tackle them through specific interventions?*

Considering its exploratory nature, researchers opted to conduct the empirical study leveraging the accounts of managers from 10 Italian companies. Qualitative data were collected from 10 interviews carried out between July and October 2023, either face-to-face or online, through a semi-structured interview guide with open-ended questions. Interviews lasted about 2 hours each. The convenience sample of the 10 interviewees, one for each company in the sample, was built leveraging the relationship networks of researchers and included board members and managers responsible for employee well-being, sustainability, HR management, and internal communication. Companies were selected to build a diversified sample in terms of company size and sector. Special attention was given to the fact that companies had adopted a hybrid way of working, with employees working both remotely and at the company's sites.

Within the company sample, 8 companies out of 10 are multinational organizations, and 6 out of 10 have Italian origins. They operate in multiple industries, with 4 manufacturing companies and 6 service companies. Regarding company size, 6 are large organizations with more than 5,000 employees, 3 are medium-sized organizations with up to 3,000 employees, and 1 is a small organization with about 200 employees. To answer the research questions, researchers conducted a thematic analysis of the data without the support of any software: emergent data were parsed to find recurrent themes, concepts, and dimensions.

Results. *Considering the first research question, which is the meaning that Italian companies attribute to employee well-being, most interviewees include two dimensions in their definition of employee well-being. The first dimension is related to nutrition, physical movement, and sport: this recalls the physical dimension of well-being (Grant et al., 2007) and health (Danna & Griffin, 1999). The second dimension recalled is the psychological one (Grant et al., 2007; Zheng et al., 2015). Moreover, all companies involved in the study recognize the role of management style, which can be intended as part of workplace well-being (Zheng et al., 2015) and as the most impacting factor on the overall level of employee well-being. According to all interviewees, management style comes before any specific initiative or practice implemented to improve employee well-being: in the words of one interviewee, "We must be aware that people's well-being is not just the prerogative of those who have the organizational label for this topic. Company leaders must first and foremost transmit this culture".*

One interviewee broadens the definition of employee well-being also to other components that are related to the workplace context, specifically linking the state of well-being to the simplification of work processes, methodologies, and tools. The question of well-being then becomes related to the facilitation of work within the organization and to what produces value in everyday life for people: "If I have a salesman who spends 70% of his time on administrative activities that are not his responsibility, I can also give him a meal voucher a day, but he is at risk of leaving the company because he will look for his professional life elsewhere, where he can express himself best".

With specific reference to the psychological dimension of well-being (Grant et al., 2007; Zheng et al., 2015), some interviewees emphasize the relevance of self-expression: well-being is generated by a set of material (e.g., a process) and immaterial (e.g., organizational culture) elements that allow people to flourish in a eudemonic way. In this sense, employees cannot experience a state of authentic well-being if they do not live in an environment that allows them to express their potential: as one interviewee states, organizations should foster "everything that allows people to flourish, the possibility for people to find in their work a means to express the best of themselves".

Some interviewees understand the provision of employee well-being in general terms as the result of the relationship between people and the organization. For instance, an interviewee recalls: "It's the way our people experience their relationship with the company, this is our common thread. We are committed to promoting and maintaining the physical, mental, professional, and socioeconomic well-being of our people. We do it through the correct circulation of information, trust, flexibility, collaboration, and motivation, which for us are fundamental elements so that people feel part of the company and share its values".

Lastly, some interviewees underline the flexibility of the concept: no one well-being model fits all employees. People's needs are very different, so well-being management implies actively listening to needs and having a portfolio of options to meet people's diverse needs, while respecting the company's objectives.

Considering the second research question of this study, that is what practices Italian companies implement to sustain the well-being of their employees, the data collected allows to depict a composite and heterogeneous framework of initiatives.

With reference to the workplace dimension of employee well-being, some companies recall the transparent communication of organizational decisions and processes such as evaluation and career development, as well as profit sharing with employees. In one case, a dimension of justice in terms of compensation is also highlighted as an example of organizational intervention with a strong impact on commitment and well-being.

In many cases, companies implement initiatives that seem to overlap the area of welfare and are addressed at the life dimension of employee well-being (Zheng et al., 2015) as well as at employees' physical well-being (Grant et al., 2007) and health (Danna & Griffin, 1999): for instance, supplementary pensions and integrative health care insurances. This highlights that for the companies in the sample the boundaries between welfare and well-being are blurred. This is not surprising: welfare services can support people's well-being in its physical and psychological dimensions. From a conceptual point of view, therefore, the well-being concept seems to include welfare, which in general refers to services that benefit people in moments of their lives other than working time.

Among the most appreciated and cited welfare services, there are those oriented towards healthcare prevention and care. It seems that companies end up making up for the critical issues of the public healthcare system: as one interviewee explains, "Among the most important welfare services, started in the 1960s, we have an internal clinic with 15 specialists who visit employees every day and with waiting times of 2/3 weeks. It was and still is among the most popular services offered to our employees. The area of health-related services in general is now back in vogue, it is among the most appreciated also due to the public health crisis".

Among the practices recalled in terms of welfare services, scholastic orientation is also mentioned. This kind of service seems to address the psychological well-being of employees in terms of personal growth (Grant et al., 2007; Zheng et al., 2015).

With specific reference to the psychological dimension of employee well-being, some companies mention remote counseling services, in the case of multinational companies provided through platforms that offer the same service on a global scale but in local languages. In certain circumstances, to address individual cases of psychological discomfort, personalized interventions are performed, aimed at supporting the single person even if the specific need requires a derogation or exception to organizational policies: this approach is represented as an expression of the "culture of personal care".

Focusing on the physical dimension of well-being (Grant et al., 2007), some companies recall the pandemic experience, which necessarily proposed a virtual version of experiences previously carried out in person and opened the way to various types of online services, for instance those dedicated to fitness. In this sense, today companies give employees the possibility of joining virtual gyms through platforms that offer various types of exercises and forms of training, and in their most recent versions integrate also a social dimension proposing games and challenges between employees. Other practices aimed at taking care of the physical dimension of employee well-being include physiotherapy services offered by the company, with a package of free sessions and others accessible at a discounted price, and initiatives aimed at ensuring greater food quality in company canteens.

Interviewees also mentioned various initiatives that could be linked to the general dimension of life well-being, sustaining the general work-life balance and family happiness (Zheng et al., 2015): gifts for births and birthdays, shopping lockers at the office, laundry services, electric charging stations, groups for solidarity purchases.

Some initiatives are focused on two precious resources for employees: time and space. Initiatives linked to better use of time include services for medical visit booking, programs dedicated to parents that offer more time for maternity and paternity in addition to what is already guaranteed by law, more time for people receiving life-saving therapies, and the possibility of exchanging vacation hours between colleagues to help those in need. Regarding space, particular attention is paid to the physical place where the work is typically carried out: the offices. Care for the strictly aesthetic dimension of offices is accompanied by attention to lighting, the choice of colors and the quality of paints, air exchange, and the choice and positioning of plants. Offices should be beautiful to make people come there willingly: to the extent that people can choose where to work due to hybrid work models, the office enters into direct competition with people's homes as a place of work and life. The care due to office spaces is important also because they become the setting for numerous occasions for informal meetings, socialization, and entertainment for employees and management; moreover, bottom-up initiatives are stimulated by setting up informal and welcoming spaces, such as areas for parties and the meetings of employee communities. This seems to address the dimension of social well-being (Grant et al., 2007).

Considering the third research question of this study, that is if and how Italian companies perceive the challenges that remote working creates for employee well-being and how they possibly face these challenges through specific interventions, interviewees appear to be only partially active in addressing them.

Hybrid working is now considered a fact: although each company has adopted different rules or guidelines, remote working is not considered something exceptional but a permanent condition of current work models. For this reason, remote working impacts companies' efforts for the planning and implementation of well-being initiatives in terms of guaranteeing equal access to these initiatives for employees both when working from home and from the office.

Actions explicitly oriented towards the well-being of those who work from home are mainly related to home workstations: coherently with data collected by Hopkins and Bardoel in their qualitative study on Australian managers (2023), also in Italy there is an effort to guarantee that remote workers are well-equipped with monitors, ergonomic chairs and desks, well-functioning Internet connections.

Considering the risk of professional and personal isolation in case of prolonged remote working (Charalampous et al., 2019; Franken et al., 2021; Mazzei et al., 2023a), Italian companies included in this study show to be partially aware of it. Interviewees recognize that well-being is also a product of the interaction with co-workers, so the excessive recourse

to remote working could have a negative impact. To avoid the risk of isolation for individuals and favor organizational integration, companies organize regular meetings in the office for all employees: for example in one company, “We organize a town hall meeting every two months to let them experience the company, trying to tell them things that may be of interest. We create institutional moments of socialization to maintain an open dialogue”. Anyway, other specific practices aimed at reducing the risk of professional and personal isolation of remote workers have not been mentioned, for instance mental health aid or coaching initiatives specifically dealing with remote working issues.

It must be added that a specific concern related to the risk of professional and personal isolation due to remote working has been raised by interviewees regarding newcomers (Mazzei et al., 2023b): interviewees recognize that the intensive use of remote working makes the onboarding process more difficult especially if newcomers are young, because the transmission of corporate values and culture in general can be undermined if the social contact with managers and co-workers is reduced. Therefore in the onboarding period, remote working should be used with caution.

Similarly, considering the risks of workaholism and of not being able to manage the boundaries between work-life and private life when at home (Biasi et al., 2022; Ferrara et al., 2022; Molino et al., 2020; Spagnoli et al., 2020), some companies recall that they are trying to define some shared rules that allow people to create, and help each other respect, a borderline between work time and personal time: for instance, through the rule “You don’t write to or reply to anyone on the weekend”. No other specific initiative aimed at increasing people’s ability to sustain their work-life balance when at home has been recalled, for instance coaching initiatives proposed to employees with such objectives.

All that said, companies feel anyway the need to assess in a focused way the state of well-being of employees when remote working is in place. Again, consistent with the study conducted by Hopkins and Bardoel (2023), this study confirms that some companies adopt specific tools to monitor employee well-being that help people managers to regularly collect data related to their team members working remotely. Starting from the share of information related to the projects in which employees are involved, these tools allow managers not only to have visibility on the progress of the activities but also to get to know how their employees feel and “how they are doing”. Based on these reports, people managers regulate the dialogue with team members to assess the state of their well-being.

Research limitations. The presented study is at its preliminary stage. The number of companies involved does not allow to make any generalizations regarding the results. Anyway, the data collected through this first exploration can be a base for designing a more comprehensive quantitative study, to investigate more thoroughly and extensively the well-being initiatives and practices implemented by Italian companies, and to obtain a clearer view of how they are dealing with the possible counter-effects of remote working for the well-being of their employees in an era when hybrid work models are becoming permanently adopted.

Managerial implications. The findings of this study underline the importance for managers to look at employee well-being in a multifaceted way. Employee well-being must not be simply reduced to job satisfaction. Of course, it comprises a workplace dimension related to work-related elements such as compensation and benefits or management style: results of this study showed in particular that management style is, according to interviewed managers, the most relevant factor to foster employee well-being among all dedicated managerial initiatives. Other dimensions of employee well-being should then be considered to approach it holistically: in fact, managers should take care of the physical, psychological, life, and social components of employee well-being, implementing practices devoted to sustaining them specifically. The experience of Italian companies included in this study shows a very broad variety of initiatives and practices to deal with these various well-being dimensions. Sometimes these practices overlap with the area of company welfare, especially when services related to employee health and physical well-being are concerned. Finally, this study alerts managers regarding the need to address the challenges that remote working creates for employee well-being. While companies included in this study are rightly concerned about the accessibility of well-being initiatives for employees working from home and/or from the office, specific initiatives for remote workers cannot be limited to sustaining their physical and workplace well-being when working remotely, for instance making them well-equipped in terms of workstation, tools and connections. As literature suggests (Ferrara et al., 2022; Hopkins & Bardoel, 2023; Mazzei, 2023b), companies should pay specific attention to addressing the risks of professional and social isolation, which affect the dimension of social well-being, and the possible difficulties faced by employees to manage the boundaries between work-life and private life when at home. This sensitiveness implies also an increase in the expectations addressed to managers themselves, who in turn are employees and therefore feel needs for their own well-being: an issue that organizations should be aware of.

Originality of the paper. This study explores how Italian managers understand the multifaceted concept of employee well-being and offers insights regarding the initiatives and practices implemented today in Italy to sustain it in its multiple dimensions. Moreover, it explores how Italian companies are dealing today with the challenges that remote working creates for employees. While numerous studies investigated the effects of remote working on employee well-being and productivity during the pandemic, this study contributes to filling the gap of knowledge related to what organizations are implementing to mitigate the negative effects of remote working on employee well-being in the post-pandemic era, when hybrid work models are becoming permanently adopted.

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Navigating Transformative Service Research for individual and social well-being: A comprehensive review

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Abstract

This systematic literature review (SLR) explores Transformative Service Research (TSR) in the Business, Management, and Accounting domains. The primary objective is to discern pivotal factors associated with the conception, design, and execution of transformative services (TSs) to improve individual and social well-being. This research endeavour holds the promise of contributing substantially to enhancing service design principles and practices promoting well-being at different levels and in different domains. Based on a search query string with rigorous inclusion and exclusion criteria, the SLR identified a sample of 188 studies indexed in both Web of Science and Scopus databases. Through descriptive, bibliometric and (manual) content analyses, we depicted the current intellectual structure of the transformative service knowledge domain and the pivotal factor of TSR mainly resulting from healthcare service provision. The manual content analysis confirmed the current literature has addressed significant components and well-being outcomes identified in the TS founding framework, mainly across health services and financial services in urban environments. Tourism and hospitality are emerging and promising TSR fields and heritage, culture and creativity are poorly investigated. Preliminary results indicate that TSR is yet to be fully developed in specific domains and ecosystems, and more research is warranted to shed light on the dynamic realm of transformative services and their contribution outside the traditional domain where TSR developed.

Key words: Transformative services, social value creation, well-being, sustainability, pivotal factors, gaps

Framing of the research. *In the ever-evolving landscape of business and technology, services dominate the value creation processes of our economy and how the needs of our society are satisfied. In this realm, Transformative Service Research (TSR) represents a branch of study within the broader discipline of service research focusing on well-being outcomes related to service (Davis & Pechmann, 2013). TSR has been defined as “the integration of consumer and service research that centres on creating uplifting changes and improvements in the well-being of consumer entities: individuals (consumers and employees), communities and the ecosystem” (Anderson et al., 2011, p. 3). In this literature, well-being encompasses eudaimonic and hedonic dimensions. The former underscores the actualization of one's potential, a concept in line with Sen's notion of quality of life as the advancement of human capabilities and freedoms (Sen, 1999). Hedonic well-being revolves around the notion of pleasure and happiness, as posited by Diener and Lucas (1999).*

Going beyond the centrality of services in the economic exchange, TSR emphasises the “social dimension of value creation” (Blocker & Barrios, 2015, p. 265) within a service ecosystem that interconnects actors at macro, meso and micro levels (Alexander et al., 2018; Rosenbaum et al., 2011). The founding framework proposed by Anderson et al. (2015) conceptualises collective value creation in TSR as a multilevel and multi-stakeholder process identifying the interactions between the service entities (i.e., service employees, service processes, offerings, organisations, and sectors) and the consumer entities - from individuals to collectives and ecosystems - shaping the well-being outcomes for both parties, individually and socially. Compared to aspects and metrics commonly used in service research, the framework emphasises mutual well-being outcomes particularly relevant or innovative in the context of TSR. It focuses on different aspects of eudaimonic well-being including improved dignity and respect, literacy, empowerment, autonomous decision-making, individual and collective health, reduced access, health and well-being disparities, consumer engagement, harmony, and social networks. The framework also relies on subjective components of hedonic well-being encompassing individuals' and people's positive everyday affective state, emotional health and self-esteem such as happiness, satisfaction, and joy (Diener & Lucas, 1999), or their absence such as tension, fear, strain, and stress.

Social value creation by TSR and the multifaceted dimensions of eudaimonic and hedonic well-being associated with TSs intersect significantly with sustainability and the Sustainable Development Goals (SDGs), presenting a comprehensive agenda for fostering a more prosperous, equitable, and resilient future for all, ensuring inclusivity in the journey towards sustainable societies globally and the advancement of human well-being. Consequently, policies and

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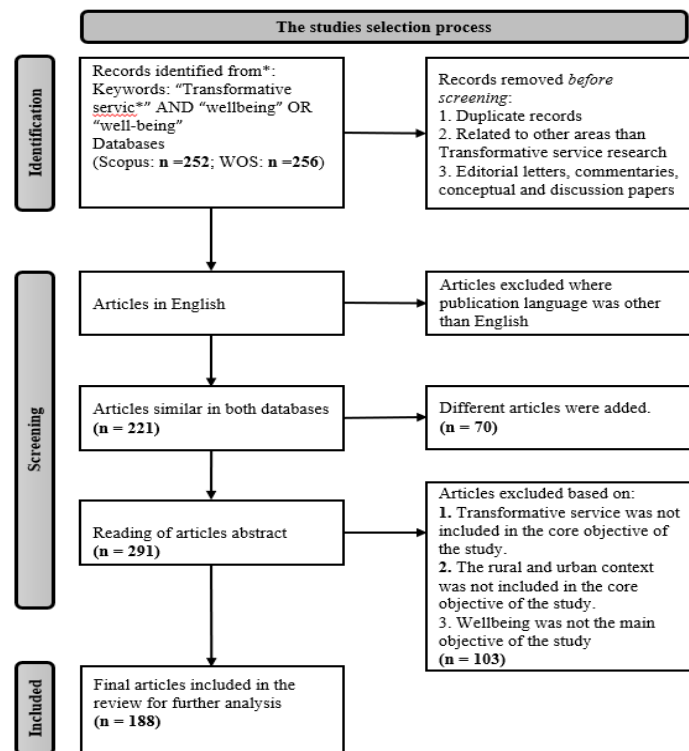
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strategies focused on well-being increasingly play a pivotal role in facilitating sustainable transitions and stand to gain from dissecting the impacts of TSs across various levels, sectors, and ecosystems. Although the comprehensive scope of the TS framework, spans micro, meso, and macro levels of service provision and consumption, transformative services have primarily undergone examination at the micro-level, particularly within specific sectors like finance, healthcare, and social services (Galeone & Sebastiani, 2021). This concentration underscores untapped potential that warrants exploration and exploitation.

Purpose of the paper. This research aims to investigate the evolution of TSR and conducts an in-depth investigation into TSR seeking to elucidate pivotal factors pertinent to the conception, design and implementation of transformative services improving individual and social well-being. The principal argument posits that an intricate comprehension of TSs holds the potential to substantially contribute to refining service design principles and practices and extend them to domains and ecosystems that could benefit from TSs' pivotal factors, catalysing holistic transformation and healing.

Methodology. The complexity of TSs potentially spanning disparate streams of research literature requires a detailed and nuanced comprehension of antecedent research endeavours about TSR. Similar to prior scholars (such as Caputo et al., 2018; Goyal & Kumar, 2020; Landry & Furrer, 2023) our exploratory research design adopted a Systematic Literature Review based on Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Moher et al., 2009) to provide a thorough, unbiased, and replicable synthesis of relevant studies (Donthu et al., 2021; Diaz et al., 2022) ensuring a fine-grained and nuanced understanding of the prior TSR. SLR has been widely employed in service research to systematically identify, evaluate, and critically analyse extant literature (Tranfield et al., 2003; Mariani et al., 2018) on specific and emerging topics such as green purchase behaviour (Sharma et al., 2023) and metaverse (Ritterbusch & Teichmann, 2023), following well-established steps to ensure transparency and rigour in such SLR studies (Madanaguli et al., 2022) (Figure 1).

Figure 1: PRISMA Chart



Source: Authors' elaboration

Aiming to elucidate pivotal factors pertinent to the conception, design, and implementation of transformative services and emphasising their potential intersection with specific domains and ecosystems, the research papers were selected using Scopus and Web of Science (WoS) databases. According to Mongeon and Paul-Hus (2016), the consistent deployment of these databases in prior SLR studies attests to their established reliability and comprehensive coverage. In our investigation, the Boolean operator "AND" has been employed to establish a logical conjunction between the terms transformative, service and well-being, ensuring that only publications containing all three terms are retrieved within the domain of "title, abstract, and keywords" of the publications in the Business, Management, and Accounting domains. The asterisk (*) serves the purpose of accommodating variations in the keywords. Accordingly, the search string was "Transformative servic*" AND "Wellbeing*" OR " Well-being*".

The evaluation of selected studies adhered to predefined criteria, encompassing (a) inclusion of research papers published in peer-reviewed journals addressing TSs, (b) accessibility of research papers through Scopus and Web of Science (WoS) up to November 2023, and (c) inclusion of research papers published exclusively in the English language. A total of 256 studies about TSs and well-being within diverse sectors were initially identified through WoS. Similarly,

252 studies were discovered on Scopus. Merging articles from both databases, Removing duplicates, and including distinct articles through snowball, the initial review phase included 291 studies. By refining the dataset further and reviewing the titles and abstracts, we excluded 103 entries on the grounds of incongruity with the defined scope of research and disparities in research type, encompassing editorial notes, commentary, conference papers, and book chapters.

Descriptive, bibliometric and content analyses through the Bibliometric R package (Aria & Cuccurullo, 2017) and manual content analysis were performed on the final sample, comprising 188 articles. The descriptive analysis explored publication trends, prominent journals, author contributions, and citation statistics. The bibliometric keyword co-occurrence analysis conducted using VOSviewer considered a threshold of at least five occurrences (Beliaeva et al., 2022; Pereira et al., 2022). The content examination through the word cloud showed how often words appeared in the sample (Poyoi et al., 2023) helping to highlight specific areas within research topics or domains based on centrality and density (Scarano et al., 2023). Based on Anderson et al. (2015)' founding framework, the manual content analysis yielded initial insights into the service and consumer entities that impact well-being, as discussed in the existing literature, and identified associated gaps.

Results.

Descriptive analysis. The publication trend over the last 14 years (from 2010 to 2023) years indicates that studies on TSR were first published in 2010 (Ostrom et al., 2010). Over time, the number of publications has notably increased since 2019, with 27 articles in each of the past five years (2019 to 2023). Furthermore, TSR studies have been disseminated across various journals. The *Journal of Services Marketing* has emerged as the leading outlet, with 70 research articles, followed by the *Journal of Service Management* (25 articles), the *Journal of Service Research* (24 articles), and the *Service Industries Journal* (21 articles). Most studies were published by authors (Corresponding authors) from the USA (75 publications), Australia (40), New Zealand (17), United Kingdom (15), and Malaysia (12). American and European countries have gained the top spots in the list of most cited countries. The United States of America stands at the top of the list with 4,441 times cited, and Australia is in the 2nd spot with 1418 times cited. Similarly, Finland (675 times), New Zealand (474 times), and the Netherlands (260 times) have secured the 3rd, 4th, and 5th rank in the list.

Co-occurrence analysis. Six distinct clusters (Figure 2), comprising 116 keywords (out of a total of 1,299) and encompassing 2,492 links reflecting a density of 16.77%, show a relatively dispersed network - the average number of links per keyword (centrality) stood at 21.48. Notably, certain keywords exhibit a higher number of links, particularly transformative service research (114 links), well-being (109), value co-creation (84), dominant logic (81), quality of life (65), service research (63), innovation (59), social support (58), health services (52), and service ecosystem (42). The remaining 12,364 links (comprising 71.26% of the network's total links) demonstrated a link strength lower than 10, with nearly 50% falling below 0.9. The most robust linkages were observed between transformative service research and well-being (65 links), followed by transformative service research and health (22 links), dominant logic and well-being (20 links), value co-creation and well-being (16 links), transformative service research and well-being (15 links), and transformative service research and quality (12 links). These associations are reflected in the keyword clusters: each cluster is identified by a colour and comprises one anchor keyword and associated main keywords, emphasising a specific discourse around TSs (Table 1).

Cluster 1 (Red)'s main theme revolves around the multifaceted aspects of service experience satisfaction affecting people's well-being (Mulcahy, et al., 2021). The cluster recommends analysing customer satisfaction as a crucial factor for evaluating the quality of service experiences, as the latter is crucial to affecting people's general health and quality of life. In addition, it involves exploring the wider effects of service contacts to understand how satisfaction levels and experiences contribute to the overall impact on people's lives. Cluster 2 (Green) focuses on the Health TS Ecosystem, a prominent TS domain. The keyword "dominant logic" clearly suggests a marketing perspective discourse emphasising the centrality of services in the economic exchange process (Danaher et al., 2024). This perspective suggests the interaction between innovation and resource integration to improve the development and sustainability of the health service ecosystem.

Cluster 3 (Navy Blue) is prominent in terms of occurring keywords and linkages and revolves around transformative service research and holistic well-being in people's and communities' lives (Zhang et al., 2023). Within this collective effort, TSR investigates cutting-edge factors for providing TSs. Engagement is a crucial factor focusing on how customer service design may actively include consumers and promote a sense of connection and participation. Happiness emerges as a crucial factor when gauging the emotional and well-being impacts of engaging people in transformative services. Knowledge acquisition is another prominent factor, emphasising how transformative service research helps to produce learning and insights to advance both individual and societal progress

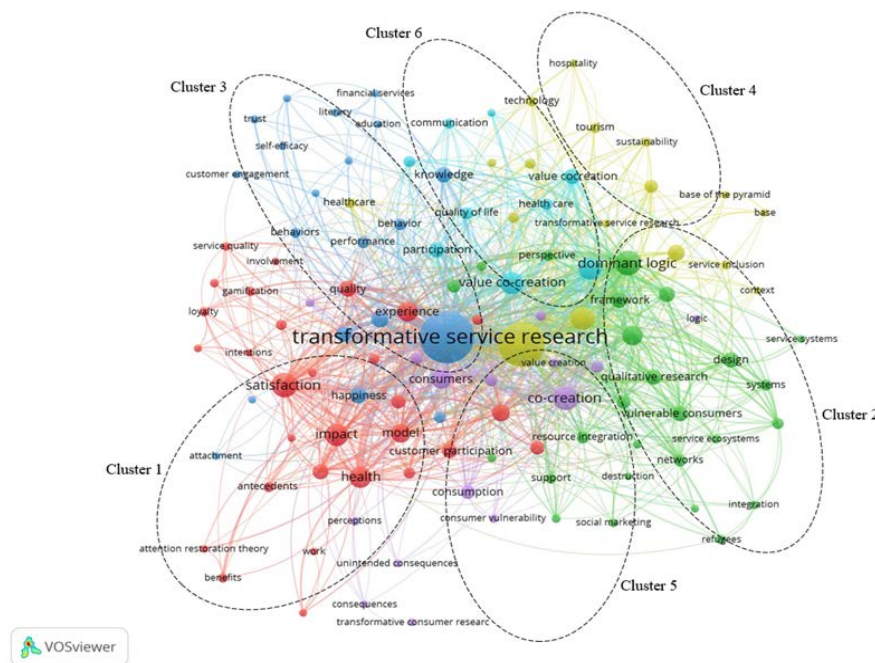
Cluster 4 (Yellow) echoes an emerging discourse in TRS revolving around the service design agenda in tourism for improving societal well-being (Kabadayi et al., 2023). Within a general discussion of how deliberate and careful service design agenda and principles enhance people's and society's well-being, the tourism lens emphasises the potential effects of travel and leisure activities on the well-being of individuals and communities when properly designed.

Cluster 5 (Purple) emphasises the co-creation of transformative services for vulnerable consumers, thus echoing diversity and inclusion issues in different environments. Collaborative processes involving consumers with special needs

are key to co-creating experiences with transformative value and encompass the improvements in empowerment and well-being arising from collaborative interactions (Rejikumar et al., 2022).

Finally, Cluster 6 (Light Blue) blends Clusters 2 and 5 discourses, focusing on value co-creation in the healthcare ecosystem (Shukla et al., 2023). It emphasises how healthcare services are interactive. Accordingly, key factors in providing highly valued healthcare services entail effective communication and active engagement of patients and healthcare professionals in cooperative processes.

Figure 2. Clusters of co-occurrence keywords



Source: Authors' own work

Table 1: Thematic clusters features

Cluster	Cluster's theme	Representative anchor and main keywords	Occurrence	Links	Total link strength (tls)
Cluster 1 (Red)	Service Experience satisfaction and Quality of life	Satisfaction (Anchor word), Experience, Impact, Quality of life, Service quality	37 25 31 20 19	81 82 80 65 66	251 196 186 152 147
Cluster 2 (Green)	TS Health Ecosystem	Dominant logic (Anchor word), Innovation, Resource integration, Health services, Service ecosystem	37 17 11 12 10	81 59 54 52 42	305 119 106 95 87
Cluster 3 (Navy Blue)	Transformative Service Research and holistic well-being	Transformative service research (Anchor word), Engagement, Service research, Happiness, Knowledge	131 17 19 19 17	114 58 63 59 60	794 139 109 120 100
Cluster 4 (Yellow)	Transformative service design agenda and Tourism	Well-being (Anchor word), Research priorities, Agenda, Service design, Tourism	102 33 18 12 08	109 81 56 46 28	683 229 94 82 47
Cluster 5 (Purple)	Co-creation of transformative services for vulnerable consumers	Co-creation (Anchor word), Consumers, Consumption, Transformative value, Vulnerability	36 26 13 10 11	90 80 47 55 39	291 182 84 86 66
Cluster 6 (Light blue)	Value co-creation in the healthcare ecosystem.	Value co-creation (Anchor word), Health-care, Participation, Coproduction, Communication	32 31 16 10 09	84 83 61 42 38	252 238 132 71 57

Content analysis. The word cloud has shown to be consistent with the thematic clusters of co-occurring keywords. The fifteen keywords that make up 60% of total word frequencies include anchor words such as TSR ($n = 52$, 6%), satisfaction ($n = 44$, 5%), dominant logic ($n = 39$, 4%), impact ($n = 39$, 4%), research priorities ($n = 36$, 4%), and health care ($n = 35$, 4%). The high centrality and density of these themes indicate that they are well-developed and prominent in shaping the transformative service research domain.

The manual content analysis confirmed the current literature has addressed significant components and well-being outcomes identified in the TS founding framework. The main investigated sectors are health services, with the greatest number of papers, financial services, and social services. In relation to the micro, meso, and macro levels, consumer entities are examined at the ecosystem level in retail and food, at the collective level focusing on groups like families, friends, and coworkers, and individual level (Previte & Robertson, 2019). Value co-creation is the process interconnecting both entities investigated the most (Gardiazabal & Bianchi, 2021). Well-being encompasses social outcomes (Rosenbaum et al., 2021) such as preparedness and social cohesion (Cheung et al., 2017) and individual outcomes such as consumer micro-transformations (Gopaldas et al., 2022).

Tourism and hospitality (Gallan et al., 2021; Feng et al., 2023; Galeone & Sebastiani, 2021) are emerging and promising fields in which TSR has been connected to sustainability and sustainable tourism. Gallan et al. (2021) have proposed a novel concept of Transformative Hospitality Services (THS) and viewed hospitality as a potential for holistic well-being transformation. Galeone & Sebastiani (2021) looked at how sustainable hospitality firms enhance well-being in the tourism sector at collective and individual levels. Feng et al. (2023) investigated the impact of employee-customer interaction within hospitality. Heritage (Steriopoulos & Ooi, 2023), culture (Kabadayi et al., 2019), and creativity (Batat, 2021), which are the baseline of the cultural and creative industries and strongly interface with tourism, have been given little attention yet. Steriopoulos and Ooi (2023) focused on the “Melbourne Cup”, discussing how heritage events contribute to transformative experience through consumer transformation, heritage identity, heritage character, and heritage components. Kabadayi et al. (2019) focused on foundational values at the core of the service process, such as organisational culture, to maximise social innovation in service efforts and explained that culture and technology factors challenge the implementation of social innovation in service organisations. Batat (2021) found that creativity and innovativeness during crises are engines of motivation for employees to confront themselves and design a creative and specialised service experience.

Due to the sectors investigated by TSR, most studies are explicitly or implicitly framed in urban ecosystems where usually health, financial and social services cluster. Rural areas are environments missing in the current strand of literature that could benefit from TSR as customers in rural areas have been shown to be more vulnerable than those in urban areas (Ho & Shirahada, 2021). Rural customers engage with service providers more emotionally due to the firm's relationship marketing and its impact on consumer emotional well-being, and compared to urban customers, they are less knowledgeable about services, offerings, procedures, and employees' work habits (Huang & Lin, 2020).

Research limitations. The most frequent keywords appearing in the sample (such as value co-creation, dominant logic, and health care) suggest that the SLR could be refined by considering combinations of these keywords. In addition, the search could be extended beyond the Business, Management, and Accounting domains and to additional databases like EBSCOhost and Google Scholar. Data mining and topic modelling could also be used to compare and complement bibliometric and manual content analysis. This comprehensive approach would provide a large dataset beneficial for leveraging the latest data analysis software, which can help reduce human bias in interpreting literature insights.

Managerial implications. The TSR's pivotal factors and research gaps resulting from the SLR ground and direct forthcoming research undertakings towards domains and ecosystems that deserve and need additional scrutiny, thus contributing to the continued evolution of this dynamic realm. Due to their interactive nature, heritage, culture, creativity, and tourism and hospitality are specific forms of soft services that have been widely recognised to have a positive impact on individual and social well-being through personal development, business innovation and place-making and regeneration. In addition, their spatial agglomeration both in urban and rural areas offers the opportunity to leverage the potential of TS design to improve the quality of life in these ecosystems and address socio-economic and environmental issues through place regeneration initiatives aimed at improving individual and social well-being.

Originality of the paper. TSR offers an innovative perspective to look at service as the fundamental basis of socio-economic interactions and value creation that contribute to well-being and sustainability. Although the concept of value creation in TSR has been recognized for over a decade as a multilevel and multi-stakeholder process, scholarly attention has predominantly been directed towards micro-level analyses. Moreover, this attention has been largely confined to specific sectors where the topic has seen significant development. This study not only identified the research gap and potential of TSR, such as emerging fields where TSR naturally encompasses multiple dimensions, particularly tourism and cultural and creative industries. It also validated the seminal TSR framework's key components and examined the strategic factors used to design and execute TSs that can be extended and adapted across domains and ecosystems where there is a paucity of TS studies. A deeper understanding of the complexities of designing and executing TSs may also help to address cultural diversity, such as the organisational culture, and technological landscape, such as digital transformation.

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Le App di food sharing tra benefici individuali e ambientali: ascolto delle conversazioni online degli utenti su Too Good To Go.

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Abstract

La perdita e lo spreco di cibo lungo la catena di approvvigionamento sono un problema mondiale, che comporta non solo perdite economiche significative ma anche ripercussioni negative sull'ambiente. La costante crescita del consumo di cibo e la conseguente produzione di rifiuti rendono necessario attuare azioni correttive ad ogni stadio della filiera al fine di frenare lo spreco alimentare. Tra queste, le tecnologie digitali, come le mobile app, possono rappresentare un valido strumento per sostenere le iniziative volte alla riduzione dei rifiuti.

Lo studio analizza il percepito dei consumatori rispetto alle app di food sharing come strumento per ridurre la quota di prodotti invenduti destinati allo smaltimento. Attraverso la metodologia del web listening, sono state analizzate le conversazioni online degli utenti con riferimento all'applicazione Too Good To Go con l'obiettivo di identificare i fattori di utilizzo della stessa e gli elementi di fiducia. I risultati emersi sui fattori edonistici e funzionali relativi alle motivazioni di utilizzo dell'applicazione offrono spunti utili alle imprese che intendono farsi parte attiva nella promozione di comportamenti sostenibili, sviluppando iniziative proprie oppure attivando collaborazioni con app consolidate come quella analizzata.

Key words: *Too Good To Go; web listening; spreco alimentare; sostenibilità; applicazioni mobile.*

Framing della ricerca. *Con l'aumento della popolazione mondiale, la gestione dei rifiuti alimentari è emersa come una delle sfide principali del XXI secolo, a causa della prevista crescita del consumo di cibo e la conseguente produzione di rifiuti. Non solo, negli ultimi decenni, il tasso di crescita della produzione alimentare ha superato quello della popolazione globale (Holt-Giménez et al., 2012) con un ovvio risultato: la perdita e lo spreco di cibo lungo la catena di approvvigionamento. A livello mondiale, dal momento del post-raccolto all'arrivo nei punti di vendita, questa perdita è pari 14% del cibo prodotto, per un valore pari a 400 miliardi all'anno (FAO, 2019). A questo si aggiunge un ulteriore 17% che viene sprecato nelle fasi finali della filiera: punti vendita al dettaglio e consumatori finali (UNEP, Food Waste Index 2021). Nei Paesi dell'Unione Europea, la quantità di cibo sprecato ogni anno ammonta a quasi 59 milioni di tonnellate, pari a 131 kg di rifiuti per persona (Consilium Europa, 2023).*

L'UE definisce gli sprechi alimentari come "food and inedible parts of food removed from the food supply chain to be recovered or disposed of (including -composted, crops ploughed in/not harvested, anaerobic digestion, bioenergy production, co-generation, incineration, disposal to sewer, landfill or discarded to sea)" (UE FUSIONS 2016).

Per frenare lo spreco alimentare è necessario attuare delle azioni correttive a ogni stadio della filiera, dalla produzione alla vendita dei prodotti finiti, passando per la trasformazione, lo stoccaggio, la manipolazione e il trasporto. Le Nazioni Unite mirano a dimezzare lo spreco alimentare nei punti vendita al dettaglio e presso i consumatori finali entro il 2030 (ONU, 2015), in linea con gli Obiettivi di Sviluppo Sostenibile (SDG 12.3). Anche nell'UE, sempre più orientata verso un'economia circolare, la riduzione degli sprechi alimentari è un obiettivo prioritario (CE, 2015). I Paesi dell'UE si sono impegnati a ridurre del 50% i rifiuti alimentari pro-capite, sia a livello di vendita al dettaglio che di consumo, entro il 2030, nonché a diminuire le perdite alimentari lungo l'intera filiera (CE, 2018). L'impatto di questo spreco ha anche ripercussioni a livello ambientale, oltre che economico, contribuendo alle emissioni di gas serra e alla riduzione dell'instabilità climatica (FAO, 2022).

L'economia circolare (EC) è un modello di produzione e consumo che permette di separare la crescita economica dalla pressione ambientale (Hofmann, 2019), promuovendo una prospettiva riduzionista legata al miglioramento delle

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pratiche di gestione dei rifiuti, sostenendo modelli di riciclo, recupero e riutilizzo dei beni (Ghisellini et al., 2016). Si tratta, quindi, di un modello la cui applicazione può contribuire alla riduzione degli sprechi alimentari, andando ad agire sulle abitudini e i comportamenti di consumatori e retailers (Morone et al., 2018). Numerose sono le iniziative proposte in tal senso, come le guide per la preparazione dei cibi (Kim et al., 2020) e sulle modalità di riciclo dei rifiuti (Lang et al., 2020) e le raccomandazioni sulle abitudini di stoccaggio domestico (van Holsteijn e Kemna, 2018). Le tecnologie digitali, come le mobile app, possono rappresentare un valido strumento per sostenere le iniziative volte alla riduzione dei rifiuti alimentari (Schanes et al., 2018; Vo-Thanh et al., 2021), spingendo i consumatori verso uno stile di vita più sostenibile. Tra queste, sono state sviluppate piattaforme per mettere in contatto i consumatori o le imprese locali per condividere le rimanenze di cibo (Zurek, 2016), applicazioni che propongono quotidianamente ricette per cucinare gli avanzi alimentari (Schanes et al., 2018), oppure per mettere in contatto consumatori con supermercati, bar, ristoranti, panetterie, pasticcerie per l'acquisto a prezzi ridotti di cibo avanzato a fine giornata (Apostolidis et al., 2021). Too Good To Go (TGTG) è una mobile app che rientra in quest'ultima fattispecie, una "anti-food waste mobile app" che "consente di salvare il cibo invenduto da un triste destino" (toogoodtogo.com). L'obiettivo di TGTG è quello di connettere i consumatori con piccole e grandi attività o aziende che altrimenti avrebbero prodotti invenduti destinati allo smaltimento. Un'applicazione di food sharing come questa, dove ciascun esercente può caricare i propri prodotti invenduti e ciascun consumatore può accedere alle offerte proposte, è una soluzione win-win-win perché costituisce un vantaggio sia per i consumatori, sia per gli esercenti sia per l'ambiente.

Vo-Thanh et al. (2021) hanno studiato, attraverso interviste semi-strutturate, la capacità dell'app TGTG di fungere da catalizzatore di un'iniziativa con finalità sociali e di sostenibilità. Gli autori hanno dimostrato i valori sociali, funzionali ed emotivi rappresentano i principali fattori di successo dell'app, grazie ai quali è possibile ridurre gli sprechi alimentari e i connessi danni sull'ambiente. A ciò si aggiunge il fine sociale di consentire a chiunque di accedere a cibo di qualità a prezzi accessibili. Anche Lewandowski (2023) ha dimostrato la capacità di TGTG di contribuire efficacemente alla riduzione degli sprechi alimentari. La caratteristica interessante di questa app è la sua prospettiva win-win-win poichè le ricadute sono positive per il consumatore, che riesce ad acquistare cibi di qualità a prezzo scontato, per i rivenditori, che vendono prodotti che altrimenti verrebbero buttati, per l'ambiente, grazie alla riduzione degli sprechi. Nonostante il rilevante successo di TGTG e la sua provata efficacia nel contribuire fattivamente alla sostenibilità ambientale e sociale, le ragioni che spingono i consumatori ad utilizzare l'applicazione e gli elementi di soddisfazione e insoddisfazione in seguito al suo utilizzo, non sono ancora state studiate. Individuare i fattori critici di successo di TGTG potrebbe fornire utili suggerimenti alle imprese che intendono contrastare lo spreco alimentare attraverso strumenti digitali, ma anche tradizionali, nella prospettiva di ampliare il target raggiungibile aumentando di conseguenza la portata dei benefici ottenibili in termini di sostenibilità.

Obiettivo. Il presente lavoro intende analizzare, attraverso la metodologia del web listening, il vissuto da parte degli utenti dell'app TGTG. In particolare, lo studio si è posto l'obiettivo di identificare i fattori che spingono all'utilizzo (o non utilizzo) dell'applicazione e gli elementi di fiducia/sfiducia verso la stessa. L'interesse verso TGTG si riconduce alla sua diffusa presenza nel mercato e al suo ruolo di app di riferimento per la riduzione del cibo invenduto. Si tratta della più grande piattaforma B2C contro lo spreco alimentare, che si colloca al settimo posto tra le applicazioni per il cibo e le bevande più scaricate al mondo. Lanciata nel 2016 e attiva in 17 Paesi tra 2 continenti (Europa e America), TGTG vanta una community composta da oltre 8 milioni di utenti registrati e più di 142.000 partner commerciali. Ad agosto 2023, l'azienda ha dichiarato di aver contribuito a salvare più di 250 milioni di pasti dal rischio di andare sprecati, l'equivalente di 625.000 tonnellate di CO2 evitate (Too Good To Go, 2023).

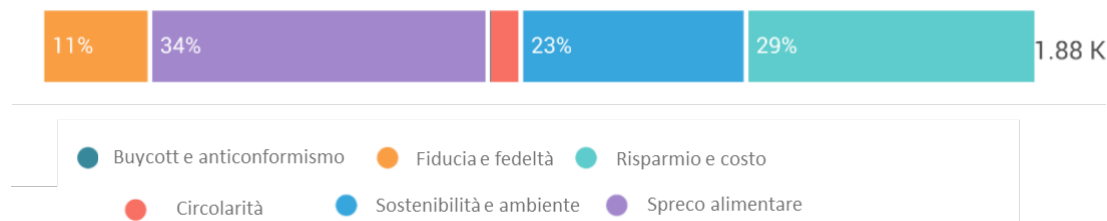
Metodologia. Il disegno di ricerca ha utilizzato un approccio metodologico mixed-methods che ha combinato l'analisi testuale quantitativa con quella qualitativa (Andreotta et al., 2019). L'analisi è stata effettuata tramite la Blogmeter Suite, una piattaforma di web e social intelligence che consente di raccogliere e analizzare il conversato degli utenti su social media e altre piattaforme del web (Facebook, Twitter, Instagram, YouTube, Tik Tok, Twitch, forum, blog, notizie e siti di recensioni di app), attingendo a un database di oltre 2 miliardi di documenti, raccolti sia dalle interfacce di programmazione delle applicazioni (API) ufficiali dei social network, sia dai crawler proprietari di Blogmeter. Sono stati analizzati tutti i testi tracciabili e leggibili che contenevano almeno una parola chiave tra quelle selezionate per l'analisi: "toogoodtogo", "2good2go", "too good to go", "tu good tu go", "two good two go", "too good tu go", #toogoodtogo. Il sottoinsieme complessivo dei dati estratti con queste query è stato ripulito manualmente per prendere in considerazione solo le occorrenze delle parole chiave che riguardavano i temi e l'app oggetto di analisi. Le metriche prese in considerazione per l'analisi quantitativa sono state: total messages, mentions, engagement e positive/negative sentiment. Il corpus è stato organizzato e suddiviso in lotti di keywords. Sono stati identificati i topic rilevanti per la ricerca – l'app TGTG e i topic sostenibilità/ambiente, fiducia/fedeltà, spreco alimentare, risparmio/costo – in base ai quali sono stati estratti sottoinsiemi di dati per un'analisi qualitativa più accurata.

Risultati. Una prima riflessione emerge osservando il cloud dei termini e degli hashtag impiegati dagli utenti per discutere dell'app (Figura 1).

per i quali si può facilmente trovare una soluzione e che non mettono certamente in discussione l'identità dell'app e la sua mission.

Il successo di TGTG lo si deve alla sua capacità di soddisfare le aspettative che gli utenti hanno nei confronti delle app sostenibili. Il beneficio collettivo è senz'altro importante, ma si affianca al beneficio individuale ricercato attraverso il risparmio e la gratificazione per aver concluso "un affare". Analizzando, infatti, i topic più rilevanti associati alle app sostenibili (Figura 3), il tema, generale, dello spreco alimentare è il più menzionato (34%). Esso viene associato in maniera inequivocabile all'app TGTG, ritenuta efficace nel convincere della sua promessa di lotta allo spreco alimentare. Emerge, poi, l'importanza del risparmio/costo (29%), che si conferma, dunque, un essenziale driver di utilizzo delle app di food sharing, che vengono percepite come non più funzionali quando l'affare viene meno.

Figura 3 – Topic associati all'app TGTG



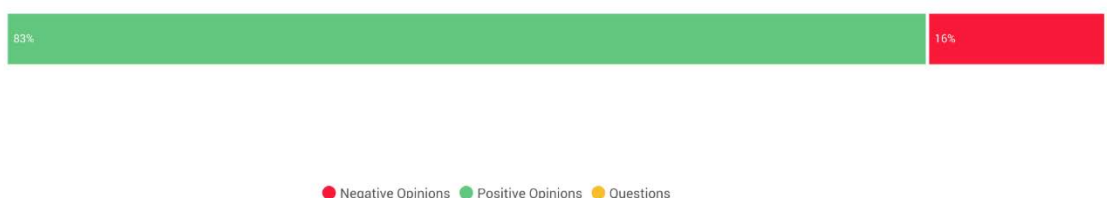
Fonte: nostra elaborazione

La sostenibilità è una tematica importante (23%), ma secondaria rispetto al fattore economico. Sebbene gli italiani riconoscano nelle app il merito di rendere possibili comportamenti più sostenibili, la centralità della sostenibilità passa attraverso il benefit del prodotto e vantaggi immediatamente tangibili: possibilità di risparmiare su acquisti abituali, facilità e sicurezza d'utilizzo.

Il tema che segue è quello della fiducia/fedeltà (11%), menzionato sia con riferimento alla facilità e sicurezza d'utilizzo sia alla fiducia nella promessa di sostenibilità. Questo trova riscontro nell'analisi molto positiva del sentiment dei contenuti riferiti al tema della fiducia nei confronti dell'applicazione, a riprova della credibilità che quest'ultima è riuscita a conquistare (Figura 4).

In sintesi, le app di food sharing – e, in particolare, Too Good To Goo – sono considerate un buon strumento per contribuire al rispetto dell'ambiente, ma solo a condizione che siano anche sostenibili dal punto di vista economico: la promessa di sostenibilità deve essere accompagnata da effettivi vantaggi in termini di costo e da un'esperienza di fruizione semplice, piacevole e divertente.

Figura 4 – Sentiment degli utenti nei confronti del tema fiducia verso la app



Fonte: Nostra elaborazione

Discussioni e implicazioni manageriali. La ricerca fornisce utili spunti alle imprese che intendono farsi parte attiva nella promozione di comportamenti sostenibili, sviluppando iniziative proprie oppure attivando collaborazioni con app consolidate come quella analizzata. L'insight a nostro avviso più interessante emerso dai risultati della ricerca riguarda la multidimensionalità delle motivazioni di utilizzo dell'applicazione: da un lato, la dimensione individuale (risparmio economico) convive con quella collettiva (beneficio per ambiente e società); dall'altro lato, i benefici funzionali (facilità d'uso) si uniscono a quelli edonistici (scoperta e divertimento).

L'eterogeneità dei benefici ricercati trova spiegazione nella natura stessa delle scelte sostenibili, che sono di per sé "intertemporali", ovvero richiedono un sacrificio oggi per un beneficio futuro, che non è necessariamente garantito né individuale (Bellini, 2023). La presenza di benefici non immediati e disallineati può costituire un disincentivo ad assumere comportamenti sostenibili, a maggior ragione se questi richiedono sacrificio e se non hanno una contropartita vantaggiosa per l'individuo. Per favorire l'engagement e aiutare l'individuo nel mantenere saldo il comportamento nel lungo periodo, è opportuno trovare il giusto equilibrio tra benefici collettivi e individuali. La leva del prezzo, quindi, rappresenta un buon rinforzo a sostegno delle iniziative che intendono stimolare l'individuo a farsi parte attiva nella sostenibilità ambientale e sociale.

Il successo di TGTG lo si deve alla sua capacità di soddisfare le aspettative degli utenti nei confronti delle app sostenibili in relazione alla presenza di benefici immediatamente tangibili quali la possibilità di risparmiare su acquisti

abituale, la facilità e la sicurezza d'utilizzo. Bisogni individuali e collettivi convergono, così come elementi funzionali ed esperienziali. La dimensione edonistica legata alla scoperta di nuovi prodotti e alla ricerca di nuove esperienze culinarie alimenta l'engagement degli utenti e favorisce quello spirito di aggregazione e appartenenza che rappresenta una delle chiavi di successo delle iniziative nel campo della sostenibilità.

La reputazione e la credibilità di TGTG nel campo della sostenibilità deve essere tenuta in considerazione da parte delle aziende che intendono farsi parte attiva in questo ambito stringendo collaborazioni e partnership esterne. È il caso, per esempio, delle numerose aziende della grande distribuzione alimentare che si stanno impegnando sul fronte dello spreco alimentare attraverso iniziative proprietarie ma anche accordi con TGTG. Contare su un partner riconosciuto e affidabile accresce la reputazione anche dell'insegna e può rappresentare un elemento di scelta del punto vendita.

La sostenibilità è un terreno molto complesso che deve essere affrontata in maniera sinergica da tutti gli operatori della filiera nella consapevolezza che la promozione dei benefici collettivi passa anche attraverso una dimensione individuale e utilitaristica di cui occorre tenere conto.

Limiti della ricerca. La presente ricerca costituisce il primo step di analisi all'interno di un più ampio progetto di studio volto a individuare i driver di utilizzo delle app sostenibili, nonché le conseguenze percepite che ne derivano. Proprio per questa ragione, si possono individuare alcune limitazioni che si intendono colmare attraverso la prosecuzione della ricerca. Innanzitutto, il focus è stato posto su una specifica app - TGTG - ma dovrebbe essere esteso ad altre applicazioni, anche in contesti diversi da quello alimentare, al fine di far emergere gli elementi di successo. In secondo luogo, per consolidare i risultati ottenuti da questa prima ricerca, sarebbe necessario svolgere un'indagine quantitativa che permetta di misurare gli elementi emersi e il loro impatto sul comportamento del consumatore.

Originalità. Nonostante l'ampio successo riscosso negli ultimi anni da TGTG, oggi considerata l'app di riferimento per la riduzione del cibo invenduto, nessuno studio in letteratura ha indagato i driver che spingono i consumatori ad utilizzare l'applicazione e, soprattutto, gli elementi di soddisfazione e insoddisfazione che ne derivano dal suo utilizzo. Il presente lavoro colma tale gap e lo fa utilizzando la metodologia di raccolta dati del web listening: l'analisi del conversato in rete e, quindi, del vissuto raccontato dagli utenti, ha permesso di individuare i fattori critici di successo, nonché gli elementi di fiducia verso l'applicazione.

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Well-being as a key for sustainable and long-term oriented management

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Abstract

While digitalization and hybrid work models have undoubtedly brought positive impacts to organizations and individuals' performance, they have also posed challenges to psychological safety. In fact many employees, particularly knowledge workers, struggle to navigate the intrusive digital professional reality, leading to increased work-related stress. Although the attention on the consequences of this new form of work-related stress has increased, prior research has primarily concentrated on examining these facets through the perspectives of stakeholders taken singularly (such as psychologists solely, HR practitioners only or employees alone). In contrast, this work delves into a range of viewpoints from various stakeholders together, providing a more comprehensive understanding. As such, the insights garnered from this study were derived from a blend of literature review and interviews conducted by the researchers with various stakeholders together (HR practitioners, employees and psychologists). From a theoretical point of view, the study adds to the literature shedding light on consequences of uncontrolled hybrid work models and technology advancements (in particular negative effects on employees' psychological wellbeing). In addition, this work also offers practical examples, insights and actionable tips derived from practitioner experience, emphasizing the importance of leaders' awareness in managing performance and ensuring psychological safety. For all these reasons this piece of work can function as a roadmap for creating and putting into effect institutional regulations, organizational policies, and procedures that promote telework practices beneficial to the health and wellness of workers.

Key words: Management; organizational wellbeing; teleworking; digitalization; work-related stress; digital wellbeing

Framing of the research. This work is focused on organizational wellbeing practices in the actual post-covid-digitalized era and it is anchored to the general stream of wellbeing, which conceptualization varies in meaning between and within disciplines (Ronen and Kerret, 2020). In particular, regardless its definition, wellbeing (and wellbeing at work) is considered always more relevant and both the scientific community and institutional bodies are looking at wellbeing as a key for sustainable development (Frey, 2018). In other words, occupational health means to ensure safe conditions for people's well-being in the workplace (Battaglia et al, 2020) and the necessity of an in-depth analysis on this topic springs from the transformative shift we have witnessed during the pandemic when organizations resorted to technology and telecommuting to sustain their operations (Mariani et al., 2023; Andrulli and Gerards, 2023). Remarkably, these novel work modes not only persisted beyond the crisis but have become central to contemporary work dynamics in the post-Covid landscape (Kokshagina and Schneider, 2023). However, despite the positive impact of digitalization and hybrid work models on organizational and individual performance, concerns are mounting regarding employee and people well-being (Shukla et al., 2024) which must remain the ultimate goal of sustainable development (Helne and Hirvilammi, 2015). In fact, if from one hand relevant contributions indicate that employees who dedicate part of their time to remote work often receive more positive performance evaluations from their supervisors (Choudhury et al., 2022), conversely there is compelling evidence indicating a notable decline in workers' health, particularly in their mental well-being (Marino and Capone, 2021), along with the increasing challenge of maintaining clear boundaries between home and work environments. This blurring of boundaries has significantly hindered employees' ability to disconnect (Campbell and Gavett, 2021). Here the framing of this research comes into play: if according with previous studies organizational wellbeing is defined as "the whole of cultural, processes and organizational practices that light up co-working life, promoting, maintaining and improving the physical, psychological and social wellbeing of work communities" (Sancassiani et al., 2015), then wellbeing is in danger and recent literature sustains that after pandemic more and more workers struggle with stress stemming from information overload and constant notifications (Parra et al., 2022; Mariani et al., 2023). Considering what said, attention on this area has grown, with researchers and professionals always more focused at exploring all sides of the hybrid work models: both opportunities and risks. However, there is still a gap and in particular it refers to the fact that despite the increased attention on the consequences of this new form of work-related stress, actual studies are unable to provide a comprehensive perspective as they are primarily focused on examining these aspects from the standpoint of individual stakeholders, such as psychologists only, or HR practitioners

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solely, or employees exclusively. In contrast, this exploratory work explores a range of perspectives from various stakeholders together (including HR professionals, employees and psychologists), leading to a more comprehensive understanding.

Purpose of the paper. This work in progress is a part of a wider project that aims to shed light on the matter of organizational wellbeing in light of the revolutionary changes on remote work modalities brought from the *global Covid-19 crisis*. In fact, following the public health emergency, organizations have increasingly embraced novel technologies and alternative work arrangements such remote working (Capo et al., 2022). This transition has impacted employee performance and organizational objectives from one side, from the other side these significant shifts have also resulted in heightened work-related stress for employees who struggle to manage the pervasive digital work environment effectively. For this research endeavors to thoroughly investigate organizational well-being in the post-COVID era by gathering perspectives from various stakeholders. The objective is to present tangible examples and actionable solutions that emerging leaders can utilize, thereby fostering a comprehensive grasp of the topic. To summarize, if as previously mentioned organizational wellbeing is defined in terms of practices promoting, maintaining and improving physical, psychological and social wellbeing (Sancassiani et al., 2015), then these three relevant aspects must be carefully investigated and thus represent the main objective of the study. This research also aims to provide managerial implications that actual leaders should consider, contributing to a better understanding of the topic.

Methodology. For this study, a qualitative methodology involving interviews with diverse stakeholders is employed. This approach is chosen based on prior research affirming the effectiveness of qualitative methods in exploring wellbeing (Dawes et al., 2021). In addition to delve deeper into these phenomena and in order to offer a more holistic understanding of the factors affecting employees' wellbeing, our study adopts a diverse sample to explore diverse viewpoints from both internal and external stakeholders. Internal stakeholders refer to two categories of organizational actors daily dealing with the constraints of remote working modalities (thus first HR professionals allowing/defining rules of these teleworking modalities in their organizational contexts, second employees who direct experience the effects of the hybrid working solutions). External stakeholders instead refer to those professionals not directly integrated in the organizations but that assist knowledge workers and support them externally in the actual digital overstressed reality (thus psychologists). This approach, drawing from similar methodologies used in previous studies (Todisco et al., 2023), aims to maximize exploratory impact (Gustafsson, 2017) of the work. In other words, the findings have been identified by mixing literature findings with qualitative data obtained by the researcher conducting interviews with different stakeholders mentioned above. With regard to the methodology then it is also important to remark that the paper is based on a theory synthesis perspective (Jaakkola, 2020) supported by qualitative evidence following Saunders and Townsend (2016) and Palmucci (2023). In particular, 16 participants from different organizational contexts have been interviewed as previously done in other exploratory studies (Bresciani et al., 2016). Thus the sample represent different industries and services and the interviews comprised two distinct parts. In the initial part, participants were asked to share in general their personal experiences with telecommuting methods and the adoption of technology within their specific settings. More in the details, according with organizational wellbeing definition of Sancassiani et al., (2015), that clearly refers to three aspects of wellbeing (i.e. physical, psychological and social), they were encouraged to express their concerns on their daily practices and if they are experiencing work-related stress. Subsequently, in the second part, participants were asked to propose potential remedies to avoid negative consequences. Concluded the data gathering, the information obtained were later arrayed following the Gioia's technique (Gioia et al., 2013) which builds upon the grounded theory and ensures methodological accuracy when using qualitative approach. By using this method, data are analyzed in first-order concepts, then grouped into second-order themes considering similarities, and then finally refined into aggregate theoretical dimensions.

Results. As mentioned, this study is a work in progress and part of a wider project. This means that the ones obtained are ongoing findings and other interviews will be conducted in the coming period. However, throughout the interviews carried out till now, participants underscored several benefits linked to remote working and technology but, as expected, the majority of the participants are facing significant challenges and expressed concerns about their psychological safety. The main results of the analysis performed with Gioia method and considering definition of wellbeing (Sancassiani et al., 2015) are summarized in the 3 aggregate dimensions discussed below:

- **Physical wellbeing=** On a physical level, participants reports several negative effects as eyes problems (because of the increased time spent in front of screen), sleep disorders (one participant said: "I read e-mails till the very last minutes before going to sleep and consequently during the night I am not able to stop thinking on tasks"), obesity and sedentary lifestyle (because of the decrease in movement even just moving from one's desk to that of a colleague for a meeting) joint pain at neck and back (because of un-appropriate work station used at home);
- **Psychological wellbeing=** On a psychological level, participants reported several psychosomatic symptoms caused by continuous workloads. In particular, interviews with psychologists reveal a significant increase in psychological issues within their patients (e.g., anxiety, addictions, loneliness, burnout cases, etc.). Furthermore, one psychologist interviewed noted a doubling in burnout cases since the pandemic began affirming that workers find difficult disconnecting from work, they are becoming addicted to constant digital communication.
- **Social wellbeing=** at a social level, participants are reporting the "blurring of personal and professional boundaries". In particular, working from home blurs the lines between personal and work life. In fact, while going to the office can provide a break from family and emotional issues, remote work alongside family members can lead to constant overlap between these spheres. This ambiguity makes it difficult to differentiate between work and family time. As a result and paradoxically then, despite the initial intention in introducing remote working practices was to increase work-life

balance for employees (Kokshagina and Schneider, 2023), we are now assisting to a decline in work-life Balance among employees remote workers because working in shared spaces with family members (like kitchens or relaxation areas) is disrupting the necessary boundary between work and personal life and is increasing stress experience instead. In addition, many many remote workers feel pressured to be constantly available online, leading to extended working hours beyond the designated schedule. Fear of not being seen as active online can exacerbate this tendency, as expressed by one participant who felt “guilty for disconnecting during lunch breaks”.

Research limitations. This study is not without limitations. First the limits refer to the approach adopted. It is to say that to prevent further segregation of managerial knowledge and to increase the validity of the results obtained, it remains essential to gather more data and perhaps by adopting diverse additional modalities of data gathering (e.g. quantitative data, etc.). Considering what said, researchers ought to integrate these findings should utilize different methodologies to advance knowledge in this topic. Also as already mentioned, this study is a work in progress and part of a big and wider project, therefore more data gathering would help in the next phase to better understand the phenomena both at theoretical and a managerial level. Furthermore, it's essential to address discrepancies between internal (HR professional and employees) and external (psychologists) stakeholders' perceptions of organizational efforts towards stress alleviation. Internal stakeholders may feel unsupported in comparison to external perceptions. On this regard, more categories can be added to the sample (as internal organizational counsellors or external consultants and coach) in order to have a clearer picture of the subject investigated and consequently increase the generalizability of the findings.

Managerial implications. In essence, the research contributes to both theory and practice by analyzing the risks for employees associated with the abuse of technology and new working modalities. The information gathered from various stakeholders as HR professionals, employees and psychologists, provide a comprehensive view of real-world scenarios. From a managerial point of view, given the imperative digital transition that decision makers must lead, alongside the shift from in-person work models to remote modalities (Fayard et al., 2021), seems to be clear that future leaders should demonstrate fully openness and adaptability to welcome these necessary epochal changes. A crucial aspect, therefore, concerns in spreading awareness within organizational contexts and departments regarding how much important is not to ignore the dynamics described. This implies promoting training programs focused on digital well-being courses able to encourage the implementation of work routines and best practices for preserving the psychological safety of workers. Considering what said, remedies and solutions proposed are the following:

- **Re-defining Policy and Rules** = First of all, as expressed from some of the interviewees, “it is not possible looking at the future with the “lenses of the past”. In other words, it is primary important to be aware of the epochal change and wear new lenses when disorientation dominates (Baccarani and Golinelli, 2011). Therefore, policy makers should solicit for example a “right to disconnect” in order to preserve the essential boundaries between personal and professional life. As we are assisting, employees fell they have no freedom to disconnect from work responsibilities, then organizational leaders need to intervene and establish clear working rhythms. Another good example of tentative to look at the future with new lenses is to completely rethink the annual and sick leave policies. In fact, traditional leave policies no longer suffice in the current digitalized era. Remote work complicates the process of requesting sick or annual leave (one participant said: “often, if people are sick, they do not ask for sick leave but they keep working from home”, leading to imbalances and increased stress. Reevaluating these policies is crucial to adapt to the post-Covid digital landscape. Another important aspect which must be re-defined is relative to the shaping of organizational cultures and communities which is jeopardized from remote working modalities. On this regard, HR departments should invest in organizing more retreats and outdoor activities to foster team building, collaboration and workers' alignment with organizational goals. This is particularly important for the onboarding of new hires who are finding difficult interacting with colleagues and build relationships effectively with remote working;
- **Learning and development training programs**= considering the constrained highlighted and in order to proactively deal with these issues, organizations (and in particular HR departments) should work in implementing revised safety training programs. This new digital well-being training could be essential for employees and could help them in integrating mental health measures into daily routines, such as managing notifications and also promoting a digital detox Culture (encouraging for example periods of disconnection from digital devices). Also, learning and development training programs should focus on the development of new leadership models. This is important for both top management (whose sponsor is fundamental to support these initiatives) and first line supervisors to actively lead the digital transition. In other words, leadership awareness is crucial for taking a proactive approach, monitoring employees' well-being and use effective communication skills for managing remote teams. This last aspect is also fundamental: providing training to supervisors (and thus enhancing their leadership soft and communication skills) is essential to help in maintaining motivation and productivity among remote workers. This means embracing a new concept of leader who needs to adopt an innovative and people-oriented approach, prioritize the well-being of employees while driving digital transitions. Proactive leadership involves anticipating/addressing challenges and ensuring a supportive work environment for all team members.

Originality of the paper. This research holds relevance not just for supervisors contending with these challenges in their daily work, but also for the scientific community aiming to enhance their understanding of the matter of wellbeing. In fact, while the focus on the ramifications of this emerging type of work-induced stress has grown, previous research has largely focused on analysing these aspects from isolated stakeholder's points of view and perspectives (e.g. solely psychologists, or employees only, etc.) whereas this study explores diverse viewpoints from different organizational actors

offering a more holistic understanding. Thus, aligning with the exploratory essence of the study and in order to have a more comprehensive perspective, the insights obtained with this study were gleaned through a combination of literature review and interviews conducted by the researcher on a diverse sample composed of HR managers, senior managers, subordinates, organizational counselors, psychologists, consultants, and coaches. In addition, as also done in previous studies (Bresciani et al., 2016), the diverse sample of participants interviewed represents different work environments across different sectors (increasing the generalizability of the findings) in diverse domains. As said, the insights derived from this study result from a combination of literature review and interviews conducted as also done in previous studies (Ravazzani et al., 2021) that focused on qualitative data and documentary analysis for analyzing practice developments. To conclude, like significant evolutionary processes in history, 2020 will be etched in memory as a pivotal juncture in the evolution of organizational wellbeing and it is primary fundamental to increase the knowledge on these paradigmatical changes and the risks associated.

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The role of the enterprise in the pursuit of the well-being for citizens and society. The contribution of the Italian Schools of Enterprise Economics and Management

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Abstract

The paper presents an ongoing research project that, starting from the crisis of the globalisation process and the liberist model, aims to revitalize the liberal thought, which has flourished in the field of Enterprise Economics and Management. Through a robust research methodology, based on both a systematic literature review and the involvement of key stakeholders in the Italian economic system, the research aims to enhance the contribution that the different Italian Schools of Enterprise Economics and Management in the second half of the XX century have made to the construction of the capitalist model that gave rise to the Italian economic miracle, also participating in its government. The research proposal suggests that as in the post-World War II period the Academy contributed through thought and action to the construction of the model on which the Italian economic miracle flourished, today we are called on to contribute to the construction of the new European and Italian model of development and growth.

Key words: *Enterprise Theory; European Model of Development and Growth; Liberal Thought; Well-being; Society*

Framing of the research. *The topic of the SIMA 2024 Conference presents a cultural opportunity of historic significance. Addressing the contribution of enterprises to the well-being of citizens and society places our discipline amidst the major crisis that Western economic systems and the economic models prevailing in recent years have been undergoing. The crisis is evident: disorders, resource shortages, inflation, and humanitarian emergencies have marked Europe and the United States for some years now. Institutions seemed incapable of effectively addressing this crisis, lacking a strategic vision that could offer peaceful solutions and stability. This vacuum is filled by some large multinational corporations, often owned by a few investment funds, which thereby exert their influence in markets and beyond. Medium, small, or less structured enterprises, which grapple with crises daily, are among the victims of this disorder. Consequently, the purchasing power of citizens declines, society experiences increasing levels of poverty, and growth prospects are slow to emerge.*

This crisis is an expression of the globalisation that characterised the end of the 20th century and the early years of the 21st century. With the process of globalisation, markets have transcended State boundaries, and multinational enterprises have been able to exploit the advantage of operating in an unregulated global environment. Through globalisation, liberalism has gradually been supplanted by liberism (Croce and Einaudi, edited by Solari, 1957). According to liberal thought, market actions must be regulated by the State; however, with the erosion of national borders, the market has been able to rapidly expand, exploiting and generating various gaps. Consequently, States have become incapable of regulating economic actions at the international level, resorting to cooperative solutions if not integration (as in Europe) at the regional level.

As the globalisation-liberism binomial declines, new balances are emerging. For example, the cohesion between certain countries, notably the BRICS, has accelerated, with the growth of member countries and the deepening of economic agreements among them.

For Europe it is about reinventing the European development and growth model. This was said in April 2024 in Brussels by Mario Draghi, who has been charged by the European Commission to prepare a Report expected after the European Parliament elections on the future of European competitiveness. Draghi argues that the European development model has dissolved, that the European approach to competitiveness undermines the European social model, and it is therefore necessary to reinvent a different way to grow. He highlights three emerging common threads, which have a lot to do with our discipline and the theme of the conference. The first is enabling scale; the lack of enabling scale penalizes our ability to compete because we fail to bring innovations to the market stage (this is what has been called by the European Commission in 1995 Green Paper on Innovation the European paradox, which is still unresolved). The second thread is providing public goods (just think of infrastructure barriers to development). The third thread is securing the supply of essential resources and inputs. The issue has a lot to do with energy for example, but other commodities also

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meet our basic needs. For these reasons Draghi is now preparing a European model of development and growth radical change proposal (Euractive Italia, 2024; Sole 24 Ore, 2024; Draghi, 2024).

Also within the framework of Draghi's speech is Enrico Letta's report, which is the first document released on the specific topic of the European Single Market, considered a pillar of the European model. Letta argues that "several factors call for updating the cardinal points of the Single Market, aligning them with the European Union's new vision for its role in a world that has grown "larger" and undergone significant structural transformation" (Letta, 2024, p. 4).

This certainly involves the enterprise, its role, and its management, which calls the Academy to deep scientific reflection.

Today we are experiencing a situation like that of the post-World War II period. This research seeks to highlight that just as then some scholars in our discipline, acting as civil servants, participated in the construction of the socio-economic development model of the time, creating the economic miracle and the conditions of prosperity that we still partly enjoy, today, reconnecting with our academic tradition, we are called for making a tangible contribution to the designing of a new, original model of development and growth.

Purpose of the paper. The purpose of the research is twofold. Firstly, the research aims to highlight the characteristics of the XX century American, European, and Italian liberal models, emphasizing their strengths compared to the liberist model upon which the process of globalisation, today in crisis, was based.

Secondly, the research seeks to underscore the role played by Italian Schools of Enterprise Economics and Management, operating autonomously yet synergistically, in shaping the Italian economic miracle of the 20th century. The thesis proposed in this research is that the current crisis offers an opportunity for a substantial reflection on the role of the enterprise in society, grounded in the teachings of past Masters.

As several scholars in Enterprise Economics and Management did in the first development cycle, the research aims to provide an answer to the current real problems that European and Italian enterprises are facing, to create the conditions for sustainable competitiveness and the well-being of society.

Reflecting on the evolution of the role of the enterprise in society in the experience of the 20th century it is possible to propose solutions to the decision-makers who are today designing the new European model of development and growth to meet the needs of the 21st century.

The role of the enterprise has been progressively defined within a discipline (Economics) that is a relatively young one and for this reason requires ongoing reflection to effectively guide present and future processes.

The origins of Economics can be traced back to the 18th century, when the economic systems, predominantly agrarian and commercial, underwent profound changes driven by the scientific and technical advancements of the era, that led to the first industrial revolution. This era not only introduced new, complex, and extensive production activities and processes but also marked the advent of spill-over effects between labour and capital, with significant social impacts. Consequently, a pressing need arose for a new discipline to govern the reorganization of resources and activities in accordance with the evolving scenario and respecting human dignity.

The binomial Economics and Values characterised liberal thought in 18th century European countries, standing at the centre of the reflection on the objectives of the emerging economic discipline. Economics, originating from Ethics, offers itself as a means to achieve objectives aligned with the value system of the society. The role of the enterprise is drawn in this contest and continually evolves over time.

The connection between Economics and liberalism is the feature of the Anglo-Saxon thought of the time, represented by Adam Smith, a moral philosophy teacher considered as the founding father of the liberal thought. According to him, the two fundamental actors in economic systems - the enterprise and the State - assume distinct yet complementary roles. The enterprise is tasked with ensuring full employment of productive factors for collective wealth, and the State is entrusted with regulating economic actions to foster private initiative and, consequently, economic, and social development (Smith, 1759, It. ed. 1995; Smith, 1776, It. ed. 2008)².

The advent of the second industrial revolution and mass production in the 20th century leads to a new era with increasingly complex challenges for the economic discipline. The early years of the 20th century are a period of intense ferment in the development of economic thought.

The 1929 crisis highlights the extent of market failures, attributed in part to large economic concentrations exacerbated by laissez-faire policies (liberism), and thus represents an opportunity to renew the Smithian liberal thought.

In the United States, the Rooseveltian model, considered the pioneer of modern neocapitalism, takes shape (Roosevelt, 1933). Roosevelt rethinks the State-market relationship assigning the (federal) State a central role in economic development. He thus launches a programme of investment policies and a new public institution (the federal authority or agency) to revitalise depressed regions, acting under conditions of economic balance and managerial autonomy. One

² \In this period, also Italy takes part to the formulation of economic thought thanks to Muratori and Genovesi. The latter was assigned the first European chair in Economics (Chair of Commerce and Mechanics) in Naples in 1754. Della pubblica felicità, published by Muratori in 1749 by way of spiritual testament, constitutes a political treaty on good government, addressed to those (then the prince) called to this great responsibility. In Muratori the political aspect is closely connected to the social and thus to the economic one (Muratori, 1749, ed. 2016). According to Muratori government is necessary to deal with imbalances and disorders, anticipating what would later become the confrontation/conflict between liberalism and liberism. In the same direction is Genovesi, who explicitly draws a line of continuity between economics and philosophy. For Genovesi Economics is synonymous with good government of the res publica (Genovesi, 1768, ed. 2019).

example for all is the Tennessee Valley Authority (TVA), which, with its focus on good governance, succeeded in the market and revitalised the depressed Tennessee region (Bruzzi, 2011).

In this period Rosenstein-Rodan, Roosevelt's collaborator, proposes the theory of backward areas; he operates also in Europe through the IBRD (International Bank for Reconstruction and Development) to revive Europe's depressed areas after World War II. His is the "big push" theory generated by large-scale planned industrialisation (Rosenstein-Rodan, 1943).

In Europe too, the 1929 crisis creates the conditions for a renewal of liberal thinking.

In Germany in particular, the Social Market Economy begins to emerge. The 1930s are a very important period for the shaping of the German neoliberal thought. A decisive contribution comes from the Freiburg School which in these years, animated in hiding under the Nazi regime, lays the foundations of ordoliberalism (Eucken, 1951; Eucken, 1952; Vanberg, 2011; Felice, 2008). The term *ordo* highlights the need to define a new order, capable of guiding the economy of the time. It is a new economic order, based on a market economy, far from *laissez-faire* logic, in which the State assumes a strong regulatory role.

The ordoliberal constitutional order is guided by the respect for fundamental economic freedoms, e.g., freedom of trade, and freedom of private property, as well as the principles of civil responsibility and monetary and economic stability. Freedom and responsibility thus constitute the pillars of the German neo-liberal economic thinking. The 1940s are the historical period in which German neo-liberal thinking shapes the country's economic model, contributing to what would later be considered the German economic miracle.

It is also important to highlight the role played by the Catholic Church's social doctrine, through the formulation in 1931 of the principle of subsidiarity, particularly in its horizontal meaning. This is a meaning, still little understood today, that enhances the role of private actors, hence also of enterprises, in the socio-economic systems (Caselli, 2012).

After World War II, European neo-liberal thinking consists of a few main experiences; in France, Monnet founded the *Commissariat du Plan*: the public actor is placed at the centre of the economic and industrial policy. National public enterprise is then adopted as a mean to support the growth of the French national champions. France in these years also animates the birth of the first European industrial policy, with the creation of the ECSC and Euratom (Monnet, 1976). Germany, on the other hand, shapes the Social Market Economy within the federal State, enhancing the role of the State over the original proposal (Bruzzi, 2022).

Italy formulates its own approach to economic-industrial development, expression of a distinct cultural and political standpoint. During this period, some Italian Schools of Enterprise Economics and Management assume a pivotal role in guiding the process.

Methodology. The research methodology is defined according to the two objectives pursued.

The study of 20th-century American, European, and Italian models of development, now underway, is based on a systematic literature review of major contributions on the subject published in both major journals and monographs.

The study of the contribution of different authors and Schools of Enterprise Economics and Management will proceed methodologically in three steps.

The first step, currently in progress, involves a systematic literature review with two primary objectives: firstly, to systematise the Italian Enterprise Economics and Management literature concerning the construction of the enterprise theory at the basis of the Italian economic miracle of the 20th century; secondly, to describe the liberal thought developed at the international level to understand the context in which the Italian experience flourished, highlighting its uniqueness.

To better organize the contributions, the research proposes to categorize the literature around several main topics. These topics are delineated based on the research issues the Schools of Enterprise Economics and Management worked on, shaping, in the second half of the last century, independently but in synergy, the cultural and scientific mosaic of our discipline:

- The enterprise as a pillar of economic development - School of Venice
- The enterprise in major industrial, institutional, and international transformation processes - School of Pavia
- The systemic-vital approach - School of Rome
- The enterprise as an institute - School of Naples
- The enterprise theory - School of Turin
- The value theory - School of Milan Bocconi
- Internationalisation and industrial districts - School of Bologna
- Marketing and competitiveness - School of Pisa
- Corporate Social Responsibility, common good, and labour - School of Genoa
- Enterprise-territory relationship - School of Cagliari

In addition to monographs, the journal *Sinergie*, founded in Verona by Panati, plays a central role in the bibliographic collection. Around this journal, an interdisciplinary scientific community emerged, expressing its own voice, and contributing to the evolution of thought during that period.

The second step involves conducting in-depth interviews with the Masters and their pupils to understand the interrelations between various topics and the theory-practice relationship. The outcome of this phase will be the development of new and original interpretative models of the current Italian scenario.

In the third step, enterprises and institutions, the main stakeholders of the project, will be engaged to share and test the proposed solutions, using qualitative research techniques (e.g., focus groups and in-depth interviews).

Results. *With reference to the first objective, the outcome will be the reconstruction of the main features of the American and European socio-economic models emerging from the different national experiences, focusing on enterprises and the role they play in the pursuit of sustainable development and societal well-being.*

The analysis will then be able to nourish reflection on the common features of the different experiences that can provide a humus for the European model of development and growth now being defined.

Within the scope of the research, a prominent position will be assigned to the Italian experience (second objective) with the aim to delineate the characteristics of the Italian model from both theoretical and empirical perspectives. This study will be well rooted in the Italian reality of the 20th century, which remain highly relevant today. To this end the research will systematise the contributions from the different Italian Schools of Enterprise Economics and Management.

The result of the two goals will be a proposal for an original conceptual framework that can fertilize the new model of development and growth under construction in Europe today. The aim is not to define a new paradigm/theory but to envision an interpretative framework of reality from an evolutionary standpoint, as economy and enterprises are vital systems in constant transformation (Golinelli, 2000; Barile, 2006). Italian thought not only has the potential to catalyse a new cycle of economic development within Italy, as in the past, but also to contribute, in a subsidiary logic, to the international scientific debate seeking a conceptual framework aligned with the liberal tradition and able to address current needs.

The Italian model begins to take shape in the aftermath of World War II, with significant contributions from prominent figures who serves as civil servants, influencing the design of the economic and industrial framework of the time.

First, Saraceno plays a pivotal role in defining the Italian post-war development model and shaping the public-private relationship within the Italian neo-liberal experience.

The Italian experience stands out as a unique phenomenon in the landscape of the time. Noteworthy issues and business cases exemplify this distinction.

Firstly, public enterprise in Italy has acquired specific connotations since its origin. As Saraceno recalls, the 'IRI formula' is characterised from the outset by the exclusion of the public monopoly regime. IRI is a holding company that maintained stable shareholdings in private enterprises governed by private law (Saraceno, 1975).

This choice aligns with the Italian tradition, which since the 19th century favoured the public holding company managing State shareholdings ('ente di gestione'), as opposed to the prevailing model of the economic public institution (nationalized enterprise). These are two culturally distinct models: through the nationalized enterprise, the State operates in a monopolized sector. In the holding model, the State operates in multiple sectors according to a competitive logic to activate capital accumulation processes that incentivize private actors to enter the sector.

This is an extremely important point in the current process of building the new European model: what role should the public actor play in the European economy? On this front today, the Western model that has progressively reduced the role of the public actor (with some national exceptions such as France) is confronted with the Eastern model, where public enterprise still plays a strong role as an instrument of national industrial policies. The experience of the 20th century can fuel reflection on a point that for socioeconomic development and thus for sustainability remains crucial.

In the Italian capitalist model, born under the auspices of Einaudi's liberalism, State intervention serves as a solution to the weakness of private capital, with the final goal of promoting competition. A Keynesian intervention would have been ineffective given the acute shortage of private capital; public action to expand demand would not have resulted in an expansion of investment. Thus, the public actor has to assume the risk directly, but only at an early stage. The public enterprise thus becomes the instrument of an industrial policy where the general interest intersects with managerial requirements (Saraceno, 1959 and 1975).

IRI becomes an internationally studied model, providing Italy with an opportunity to stand out on the world stage. From this humus, a sensitivity to the development issues of the Mezzogiorno region emerges, with Saraceno playing a central role in initiating the so-called pre-industrialization policies inspired by Roosevelt's experience and brought to Europe by Rosenstein-Rodan. Rosenstein-Rodan decides that IBRD funding should finance industrial projects in Southern Italy through an ad hoc authority, separate from other industrial policy initiatives and inspired by the US authorities: the Cassa per il Mezzogiorno.

The investments made during the initial period (1950-60) are largely directed towards infrastructure to catalyse subsequent industrial development. Through the "big push" theory by Rosenstein-Rodan, private investment is intended to be driven by public investment, thereby transitioning the environment from agricultural to industrial.

In this context, Saraceno addresses the North-South divide, a longstanding Italian issue that remains unresolved. Saraceno views depression in the South and stagnation in the North as two sides of the same industrial problem, emphasizing the need for a comprehensive approach that integrates investment and social policies (Saraceno, 1952). Saraceno in this perspective is a forerunner of the sustainability issues at the core of scientific and institutional debate today.

While Saraceno's objectives for enterprise good government face challenges, failing to overcome serious obstacles, it is undeniable that the policies and instruments implemented after World War II yield significant results and lay the foundation for the Italian economic miracle. For example, Italy excels in various heavy industries, e.g., in petrochemicals and steel production. At the petrochemical level, despite entering the market late and from a disadvantaged position following World War II, Italy affirms itself on the European and international markets.

ENI is established in 1953 under Mattei's leadership as part of a reorganization of all public oil activities. In line with Italian tradition, ENI functions as a holding with four subsidiaries: AGIP for fuel distribution, AGIP Mineraria for mining activities, SNAM for gas distribution, and ANIC for refining and petrochemical production.

ENI's approach also exemplifies Italian specificity. Mattei seeks to challenge the dominance of large integrated oil corporations (International Oil Companies) by entering into agreements that empowered the owner countries of oil reserves. The "Mattei formula" involves these countries in extraction activities through joint ventures, with costs and profits shared among partners. ENI assumes the risks of the venture and pays no royalties, but, if successful, joint ventures are established, with the country sharing the costs already incurred by ENI. The first agreement Mattei negotiates with this formula is with Egypt, resulting in a joint venture with ENI holding 20 percent. In 1961, Mattei signs an agreement with the USSR for oil supply in exchange for the export of synthetic rubber, initiating economic relations amid the Cold War that would be further strengthened in subsequent years (Frusciante, 2012).

Mattei's approach marks a discontinuity from the internationally dominant US corporation model based on mere competition, boosting Italy to a prominent position on the world market as Europe's refiner (Mazzaferro, 2021).

Italy's current foreign energy policy towards neighbouring Africa and Middle Eastern countries still reflects Mattei's approach. This demonstrates the long-term strength of a strategic approach to business, diverging from a purely managerial perspective (Bruzzi, 2023).

Of course, the Italian experience is not solely characterised by the public holding company. Private enterprises also exemplify an original model. One cannot fail to mention Olivetti, an enterprise that distinguished itself from US multinationals not only in the competitive arena of the IT sector but also in its ethical approach. Olivetti prioritized the growth and well-being of its employees and their families, emphasizing community building through the enterprise, which transcended mere economic dimensions (Olivetti, 1951 and 1959). Olivetti's legacy remains a lesson to the world on the political and cultural dimensions of the enterprise, deeply rooted in the Italian tradition of the teachings of various Schools of Enterprise Economics and Management. According to this tradition, enterprises are institutions designed to create wealth, economically and socially, with a long-term orientation. They operate within relational contexts that are both humus of economic activity and a product of it. In this perspective, enterprise sustainability (good government) and social well-being are mutually reinforcing (Caselli, 1995 and 1997).

Within this network of relationships, small and medium-sized enterprises, agile and flexible and therefore able of occupying global niches and of coping economic challenges, can succeed. Industrial districts, where such enterprises mutually support each other, represent another Italian specificity that in the past proved to be effective in responding to international competition (Beccattini, 1987; Lorenzoni, 1990 and 1992).

Italian scholars have played a crucial role in highlighting at the international level the uniqueness of Italy's industrial concentrations. Italian districts have become symbols of an internationalisation process that strengthens entire territories, not just individual enterprises (Lorenzoni, 1997; Usai, 2004). This underscores the strategic and value-oriented nature of enterprises (Sciarelli, 2002).

Similarly, the study approach oriented by the European vision highlights that the European integration process is a political alternative to globalisation, regulating competition and thus reducing opportunities for exploitation of unregulated arenas and gaps. Placing the study of enterprise in the context of the process of European integration means recognising, in line with the liberal tradition, the importance of creating institutional frameworks where enterprises can grow and become drivers of development (Usai and Velo, 1995; Velo, 2004). The European context moreover can be humus of innovative entrepreneurial formulas: the European Union in strategic sectors has supported new types of enterprise, such as the European Joint Undertaking, which in different strategic sectors (energy, space, medical research, etc.) has taken, in line with the principle of subsidiarity, different forms to support the different needs pursued: public-private collaboration, industry-research collaboration, economic development, technological innovation (Velo, 2007).

With reference to the research output, given the breadth of the content, it may consist of multiple publications, including both scientific articles focused on specific issues and monographs that can offer the broadest vision and the best coordination between issues. In all cases, the publications will be well anchored in current reality and will have as their main driver to contribute to the construction of the new European model of development in which enterprises and society can prosper.

Research Limitations. *The limitations of this research are primarily attributed to the limited resources available. This project encompasses a broad cultural scope, necessitating the involvement of numerous academic souls rooted within the Enterprise Economics and Management scientific community. However, these limitations can be mitigated if the project acquires support from academics across various Schools, thus creating the intellectual critical mass essential for achieving the final objective.*

Managerial Implications. *The managerial implications of this research hold significant relevance both from the theoretical and from the practical point of view.*

The proposal for a new interpretative framework will be useful to the two targets of the research: policy-makers, who today are defining the new European model of development and growth, will be able to find in the research a systematic reflection that can help define solutions consistent with European liberal and neoliberal thinking, mitigating the influence of forces against order, development, and peace.

Enterprises will be able to build strategies and practices around a platform of values, models, and contents, able of empowering each stakeholder to forge its unique entrepreneurial path within a variable geometry logic. Small and

medium enterprises constituting the Italian industrial fabric will benefit from anchoring their choices to a scientific discussion on historical models and forward-looking proposals, enabling to fortify both their sustainability and competitiveness.

Originality of the Paper. *The European economy, lagging far behind as vulnerability factors continue to worsen, urgently needs practical solutions to the many ongoing crises. The situation calls for the Academy to play its part. As in the post-World War II period a part of the Academy contributed through thought and action to the construction of the model on which the Italian economic miracle flourished, today we are called upon to contribute to the governing of the transformation taking place. To this aim this research proposes to construct an original interpretative framework consistent with the Italian tradition of the discipline of Enterprise Economics and Management and the liberal thought.*

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The strength of Nutriscore in improving sustainable eating habits and well-being: bad and good news

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Abstract

This study represents the initial assessment of Nutriscore's efficacy in shaping perceptions of food healthiness in consumers. Nutritional labels are becoming increasingly common for effectively conveying messages to consumers and are adopted by institutions to develop policy strategies aimed improving collective awareness of healthy dietary habits. The efficacy of a nutrlabel is defined as the capability of Nutriscore to guide judgments and perceptions of food healthiness, overcoming barriers generated by personal characteristics and education.

To assess the evocative strength of Nutriscore versus the associated characteristics of the product, we conducted a laboratory experiment wherein we manipulated visual stimuli by misrepresenting Nutriscore labels on both healthy and unhealthy foods.

Our findings revealed a significant propensity for errors in assessing product healthiness, with half of the sample committing more than four errors out of six tests. Interestingly, these errors did not correlate with the type of food, consumers' education level, or food literacy. However, gender was a significant factor, with males making more errors than females (p-value: 0.021).

Consequently, it appears that consumers are more influenced by Nutriscore than by inherent product characteristics, underscoring the label's strong comprehensibility. However, this influence can have negative implications as Nutriscore's algorithm is built on criteria that generate paradoxical associations between scores and dietary guidelines. For instance, Nutriscore standardizes nutrient quantities based on 100g portions rather than considering consumption frequency. Future food labels should reflect healthiness relative to consumption frequency, employing simple yet effective designs akin to Nutriscore.

Methodologically, this paper proposes a straightforward approach for managing and evaluating the efficacy of both current and prospective food labeling systems.

Keywords: nutrition label; food choice; healthiness perception; public eating habits

Abbreviations

FL: food literacy

HP: Healthiness Perception

MD: Mediterranean Diet

NS: Nutriscore

Framing of the research. *Institutions are addressing the promotion of a healthy lifestyle to mitigate modifiable risk factors associated with non-communicable diseases, which account for 80% of the disease burden in Europe, totaling €1,179 billion in 2021 (Eurostat, n.d.). Encouraging well-being in Europe could potentially lead to a reduction of up to 70%, significantly alleviating social burdens, reallocating funds to other welfare initiatives, and bolstering economic productivity and growth through a healthier workforce (Public Health - European Commission, n.d.).*

Dietary patterns play a crucial role in influencing lifestyle and well-being, prompting institutions to develop policy strategies aimed at enhancing collective awareness among citizens. Although citizens' healthy eating habits are influenced

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by various internal and external factors (Marcelino et al., 2001; Remick, 2009), institutions can enhance public knowledge by adopting policies that convey messages to promote healthy food choices.

Since 2011, the European Commission has mandated the inclusion of nutritional tables on product packaging to display quantitative product characteristics, such as the amount of carbohydrates, protein, fat, saturated fat, and salt. However, subsequent studies have shown that this instrument may not be accessible to everyone, particularly those without expertise in the field (Storcksdieck genannt Bonsmann, 2020). Consequently, front-of-pack nutritional labels have gained importance, with many countries adopting logos on a voluntary basis. In Europe, 63% of member states have implemented various logos, with Nutriscore being commonly adopted by Belgium, France, Germany, Spain, Luxembourg, and the Netherlands (European Commission, 2020).

Front-of-pack nutritional labels are categorized into three classes: "directive," "semi-directive," and "non-directive," each providing consumers with varying levels of interpretation regarding the healthiness of the product (Donini et al., 2023). Nutriscore, belonging to the directive category, utilizes a color-coded system accompanied by alphabetic letters from A (green) to E (red) to indicate the product's nutritional quality. Despite its graphical clarity, the algorithm used to generate Nutriscore scores has sparked controversy, as it may yield paradoxical scores compared to national guidelines based on frequency advice, potentially leading to consumer misinterpretation.

Despite the contentious nature of the scoring algorithm, the Nutriscore logo effectively communicates nutritional information in a clear and straightforward manner, making it accessible across different socio-economic statuses (Talati et al., 2019). This characteristic is crucial for disseminating nutritional information to the entire population.

Since the nutritional label is presented on the front of packaging, a lot of researchers have investigated how changing the position of nutritional label changes the visual attention of consumers (Dan J & Robert W, 2011). The same methodology has been adopted to compare which nutritional label was more effective in catching the consumer attention (Siegrist et al., 2015). Although from the literature we know that internal characteristics can also play a role in shaping dietary habits. For example, being female increases the probability of having higher food literacy and paying more attention to nutritional characteristics than men (Trieste et al., 2020). Also, the personal propensity to be more active at a certain time of the day (chronotype) can change eating habits; indeed, evening types appear more inclined to adopt an unhealthy diet (Teixeira et al., 2022).

Purpose of the Paper. This study aims to investigate the effectiveness of Nutriscore in shaping consumers' perceptions of food healthiness.

The relevance of this investigation stems from two main objectives: firstly, the widespread adoption of Nutriscore may influence the food perceptions of many citizens, especially if it were to be adopted by additional states. Secondly, the controversial algorithm used to calculate Nutriscore often produces scores misaligned with Mediterranean dietary guidelines, which have proven to be a preventive measure against non-communicable diseases (Tsigalou, 2020).

We examine three dimensions to evaluate the efficacy of the Nutriscore logo: (i) visual attention, (ii) influence on perception or judgment of food healthiness, and (iii) independence from personal characteristics such as education level, food literacy, and other consumer traits.

To guide our study, we formulate the following research questions:

1. Can personal characteristics such as age, sex, BMI, chronotype, adherence to the Mediterranean diet, probability of developing eating disorders, and declarative approach to choosing the healthiness of logos influence visual attention?
2. Does visual attention to the logo affect error rates?
3. Are error rates influenced by personal characteristics?
4. Does the Nutriscore logo impact error rates?

To the best of our knowledge, this paper represents the first attempt to assess the efficacy of Nutriscore in influencing perceptions of food healthiness.

Methodology. In our study the effectiveness of a nutritional label has been measured using three different criteria:

1. Visual attention.
2. The ability to influence judgment or perception of the healthiness of the associated food.
3. Independence of 1-2 from educational level, food literacy and, in general, the personal characteristics of the consumer. Indeed, beyond the confines of nutrients tables, the added value of a nutritional label lies in its ability to be understood by both educated and non-skilled consumers.

To assess visual attention, we employed eye-tracking technology, a neuroscientific tool used to measure how often and for how long participants' gazes were drawn to the Nutriscore logo. The adoption of this neuroscientific tool was crucial to assess if the consumers were attracted differently based on their profiling characteristics and also to ensure they saw the Nutriscore logo on the product packaging we showed them. This methodology has been previously utilized to investigate the logo's impact on consumer attention (Gastón Ares, 2013; Laura Bix, 2015).

The eye tracker Tobii tracks the gaze of the eye on a visual stimulus. The tool is non-invasive, and the participant does not even notice it since the black bar of eye tracker is positioned at the bottom margin of the computer screen and it blends with the color of the computer.

The derived variables were the total number of fixations on the label and product, and the total duration of fixations on the Nutriscore and product. Since the fixation area is significantly smaller for the logo than for the product, we considered the average per-fixation duration of the logo and the product when comparing attention to the logo and the product, respectively.

Since one the potential strength of a nutritional label is its ability to influence the perception of product healthiness, we detected whether the principal driver of perception was the label or the characteristics of the product by modifying the nutritional labels to induce incorrect judgments. The strength of Nutriscore is represented by the overall percentage of mistakes.

We selected 8 food packaging items, considering 4 healthy and 4 non-healthy products (defined as “healthy” those foods with a recommended daily frequency and “unhealthy” those with a recommended frequency of 1-2 times per week, according to the Guidelines of the Mediterranean Diet (MD), see Willett, 1995). Once we obtained the correct Nutriscore scores (ranking from A to E) using the related algorithm, we modified them, shifting each score by two positions: from B to D, in the case of healthy products, and from D to B in the case of non-healthy foods. We did not select products that were originally scored as A, E, and C.

The third criterion for evaluating the strength of Nutriscore involves correlating the percentage of errors obtained with personal characteristics. A lower correlation indicates a stronger performance of the nutrition label.

Experimental design

The study comprises two parts.

In the first session, we profiled consumers who consented to participate in the study through an online survey. The survey lasted for 13 minutes and requested anthropometric variables and validated questionnaire essential for understanding if personal characteristics could be linked to attitude towards packaging (visual attention) and personal characteristics. The survey was articulated into:

A) a series of validated questionnaires aiming to assess:

- declarative or substantial food literacy (SFLQ), (Corinna Gréa Krause et al., 2018)
- risk of developing eating disorder (SCOFF), (Francesca Solmi et al., 2015), adopted to screen for eating disorders, as niche literature has investigated the link between eating disorders and the differing attitudes towards food labels (K. E. Giel et al., 2011).
- Short Morning Evening Questionnaire (RMEQ) (Vincenzo et al., 2006), since literature suggests that evening-chronotypes are more likely to prefer unhealthy dietary pattern (Teixeira et al., 2022).
- adherence to the Mediterranean Diet (MEDAS) (Schröder H et al., 2011)

B) a set of additional items: height and weight (used to calculate BMI), sex, age, education (), and weekly frequency of food shopping, knowledge of NS.

In the second session, we examined visual attention and quantified the influence of Nutriscore on food perception.

To study visual attention, we conducted an eye-tracking experiment displaying eight Nutriscore-labeled food items on a computer screen. These items comprised three healthy products scored as B and three unhealthy products scored as D. Recognizing that the definition of “healthy food” varies depends on dietary patterns (Plasek Brigitta et al., 2020), we categorized the items based on the frequency of Mediterranean diet definition. We manipulated the scores by changing B scores to D and D scores to B. To minimize the likelihood of subjects detecting the programmed errors, two images with the correct labels were provided.

After each presentation, participants rated the healthiness of the foods shown on a 1-5 Likert scale. At the end of the experiment, each participant provided feedback on whether the product or the label guided their evaluation better. The discrepancy between the healthiness assessed by participants and the real value attributed by the Mediterranean diet represented the error in perception. Manipulating the logo was essential to verify the logo’s strength in shaping food perception. A higher percentage of error indicated greater trust that consumers had in the Nutriscore logo.

Results. Data analysis was conducted using R, version 4.2.2.

The independency of gaze metrics and the percentage of errors from personal profiling was assessed by comparing the medians of the total number of fixations and total fixation duration associated with Nutriscore and the product across different groups stratified by the profiling variables that defined the study population.

Independency of error percentage in the different groups was determined through a χ^2 test.

A p.value >0.05 for the Kruskal-Wallis tests and the χ^2 test, respectively, indicates that gaze metrics and the percentage of errors do not depend on consumer’s skills and education.

We collected a sample of 57 subjects with a mean age of 26.08 (SD= +7.65) with a balanced representation of 54% female and 46% male.

From the first session of the study, we had the opportunity to profile our sample, as summarized in Tabel 1 and Table 2.

Tab. 1: discrete variable of personal profiling

	Number (%)
Sex	
• Woman	31 (54%)
• Man	26 (46%)
Education	
• High school	22 (38,6%)
• Degree	30 (52,6%)
• Post-degree	5 (8,8%)
Driver:	
• Personal knowledge	30 (52,6%)
• Nutriscore logo	27 (47,4%)
Prior knowledge of the Nutri-Score	
• Yes	18 (31,6%)
• Not	39 (68,4%)

Tab. 2: continue variable of personal profiling

	Mean (\pm SD)	Max.	Min.	Median
Age	26.2 (\pm 7.8)	62	19	24
MEDAS	7.5(\pm 2.05)	12	4	7
SCOFF	2.1 (\pm 1.4)	5	0	2
BMI	22.3(\pm 3.16)	33.6	17.36	22.1
rMEQ	14.5(\pm 2.97)	20	7	15
SFLQ	34.7(\pm 6.43)	47.4	17.6	34

MEDAS: assesses the adherence to mediterranean diet. From 0 (lower score of adherences) to 14 (higher score of adherences)

SCOFF: measure the probability of being more likely to develop eating disorders. From 0 to 5.

BMI: set the range of normal weight and non-norm weight. From 18.5 to 24.9 is normal weight, under 18.5 is underweight, over 25 is overweight, over 30 is obesity.

rMEQ: set the range of chronotype: 4–10 evening-type; 11–18 intermediate-type; 19–25 morning-type

We investigated the relationship between individual differences and sample characteristics.

Interestingly, women were more likely to adhere to the Mediterranean diet (p -value=0.02). On one hand, this result should be interpreted as females being more conscientious about their diet, thus adhering more closely to Mediterranean concepts. On the other hand, it suggests that this conscientiousness can sometimes manifest as excessive concern, potentially laying the groundwork for eating disorders; indeed, women also exhibited a higher probability of developing eating disorders (p -value=0.0025), as extensively documented in the literature (Hsu, 1989).

Additionally, individuals with high adherence to the Mediterranean diet (highest level of MEDAS) reported judging products based on their own knowledge (p =0.005) and being familiar with the Nutriscore logo (p =0.034).

To address the research questions, we divided the results into three sections: firstly, the relationship between personal characteristics and visual attention; secondly, the relationship between personal characteristics and the rate of errors committed in evaluating the healthiness of products; and finally, the rate of errors and visual attention.

Overall, the product received a higher number of fixations and longer duration of fixation, as shown in Table 3.

Tab. 3, Description of the number/duration of fixation for product and for logo:

Gaze metrics	Logo	Product
Average number of total fixations	44.88 (\pm 21.95)	159.9 (\pm 35.34)
Average of total fixation duration (ms)	296.7 (\pm 175.11)	1785 (\pm 2365.24)
Average number of fixations on 8 stimuli	5.61 (\pm 2.74)	159.8772 (\pm 35.34527)
Average fixation duration on 8 stimuli	1657.064 (\pm 1086.077)	6106.154 (\pm 1915.872)

Attention and personal characteristics

We also assessed if personal characteristics (e.g., age, sex, education, Body Mass Index, etc.) could influence the duration of gaze spent on the Nutriscore logo or on the food product image, both displayed on the front of the packaging.

We found a statistically significant relationship between individuals who reported judging the product based on their own knowledge and those who did not. Specifically, individuals who judged the product based on their own knowledge looked at the product image several times more frequently (p -value: 0.04) and for longer durations (p -value: 0.009). Additionally, the data indicates that individuals with higher levels of education (undergraduate and postgraduate) spent more time (p -value= 0.02) looking at the logo compared to those with lower levels of education (high school).

Errors and attention

Comparing attention and errors, subjects who made numerous errors, as expected, had a lower total fixation count (p -value: 0.005) and shorter duration of fixation (p -value: 0.0278) on the food stimuli images than subjects who made fewer errors.

Attributed to incorrect labels, the frequency of judgment errors regarding the healthiness of products was significantly higher in males than in females (p -value of the Kruskal-Wallis test = 0.021). Subjects adhering to a Mediterranean diet (i.e., with a high MEDAS score) made fewer errors (p -value of t -test = 0.06). Individuals who claimed to make choices based on their own knowledge made fewer errors (p -value of Kruskal test = 0.000).

BMI (p -value = 0.994), propensity for developing eating disorders (p -value = 0.513), chronotype (p -value = 0.759), education (p -value = 0.540), and the level of acquired food literacy (p -value = 0.467) did not correlate with the number of errors. These data highlight the effectiveness of Nutriscore in influencing judgments about product healthiness, regardless of certain personal characteristics relevant in traditional nutritional labeling, such as food literacy and education. If the goal of Nutriscore is to mitigate personal differences and educational barriers, it has indeed achieved its objective.

Research limitations. The study's findings are indicative of a digital environment, such as online shopping. Our future objectives include exploring outcomes in a physical setting to compare consumer reactions. Regarding the sample demographics, the mean age of 26.2 suggests that the results are representative of a specific demographic within the population. We aim to enhance the sample to obtain results that encompass a broader population. The research is work-in-progress.

Managerial implications. Nutriscore appears to be highly intuitive and effectively conveys the perceived healthiness or unhealthiness of food. However, despite its apparent simplicity, the algorithm underlying Nutriscore can inadvertently create paradoxes that consumers may not readily discern. These misunderstandings have the potential to lead to unhealthy dietary choices, undermining the label's intended purpose and leaving the challenge of promoting nutritional awareness unresolved.

Based on the findings of the study, it is imperative to address the gaps inherent in the algorithm, considering various aspects. For instance, the algorithm should consider the food category to which a product belongs, aligning with dietary principles such as the Mediterranean diet. Otherwise, foods from vastly different categories may receive the same score, leading to confusion. For example, a vegetable pizza, zero-calorie Coca-Cola, and chips might all receive a B grade, despite their disparate nutritional profiles and consumption frequencies.

The present study also highlights the urgency to revise the algorithm behind the logo and lays the foundation for investigating how to implement the algorithm to create an updated version that avoids the production of paradoxical scores. The innovation of the algorithm should take in account that the final score of the product should align with the Mediterranean diet, as it is currently, the most studied dietary pattern and has been revealed to be the most successful in combating Non-Communicable Diseases. If the new algorithm of Nutriscore aligns with these indications, it would be a very effective logo.

Originality of the paper. To the best of our knowledge, this paper represents the first investigation into the strength of NutriScore, offering a general prospective by testing the effectiveness of nutriscore on stratified target groups.

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Does organic food consumption impact subjective well-being? A mediation-moderation approach

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Abstract

Does eating organic food make people feel good? If so, under what circumstances? Previous research has suggested an association between happiness/pleasure and the consumption of organic food. Health concerns have been demonstrated as a moderator. However, there is still a need to understand better the boundary conditions for the effects of organic food consumption (OFC) and subjective well-being (SWB). More specifically, what variables can influence this process? For instance, which mediators and moderators can improve our understanding of the OFC-SWB relationship? This research aimed to propose and test a model that explains the OFC-SWB relationship, considering the mediation effect of emotional process (self-enhancement) and the potential moderation of food-related lifestyles (FRLS), health concerns, environmental concerns, and locavorism. The model is tested based on data from a survey of 581 organic food customers. Our findings suggested a significant mediating role of self-enhancement between OFC and SWB. Moreover, FRLS and locavorism were significant moderators for the path OFC-self enhancement. On the other hand, health concerns and environmental concerns were not significant moderators. Finally, the study also shows that consumers who prepare their meals have higher scores on the index of organic food consumption. The same occurs for older and more educated consumers. The research finishes with a theoretical discussion and practical implications.

Key words: organic-food; well-being; self-enhancement; locavorism; food-related lifestyles; health concern

Framing of the research. *Responsible production/consumption has been one of the sustainable development goals (SDG 12) proposed by the United Nations since its 2015 meeting (UN 2020). Indeed, mass production patterns are becoming unsustainable and creating severe environmental problems, e.g., climate change and global pollution, and hence there is a need to understand better the drivers of more sustainable choices (e.g., Betzler et al. 2022; D'Souza et al. 2022). Food consumption is a key issue in sustainable development goals due to its impact on individual and public health, natural resources, social cohesion, and the economy (Kerr et al. 2023; Schleiffer et al. 2022). Thus, to reduce the environmental impacts of food production and consumption requires developing more sustainable alternatives, such as organic food and the agroecology system (Jürkenbeck et al. 2023; Kerr et al. 2023).*

Sustainable food involves mainly healthy and environment-oriented alternatives in substitution of conventional and agrochemical-intensive agri-food options (Kerr et al. 2023). Organic food is one of these alternatives because it is free of pesticides, synthetic fertilizers, or products that can cause damage to health, in addition to using techniques and procedures that respect the environment and preserve the quality of the food (Kerr et al. 2023). Hence, organic food consumption deserves attention as one of the more prominent and global consolidated alternatives toward sustainable food consumption (Rizzo et al. 2020; D'Souza et al. 2022).

In this sense, following previous studies, organic food is considered a healthy and environmental-oriented food production mode (Reganold and Wachter 2016). However, previous studies about organic food consumption present mixed findings regarding how people express their health and environmental concerns in their choices (Apaolaza et al. 2018; Tandon et al. 2020). Indeed, considering that an individual's purchase and consumption signal his/her lifestyle to people in his reference group (Jung et al. 2020), it is common for consumers to choose products/services that promise greater care for the planet, especially when this choice appears in public (Semila and Panda 2019).

In addition, a few research has shown that organic food consumption is associated with individuals' happiness and well-being. For instance, Apaolaza et al. (2018) supported the influence of organic food consumption on subjective well-being (OFC-SWB link). They argued that such an effect could be influenced by both cognitive processes (e.g. healthy diet beliefs) and emotional mechanisms (e.g. label effect). Moreover, such effects were stronger for consumers who presented a higher health concern. The study suggested that the organic claim acts as a heuristic cue guiding consumers to believe that the product will increase their well-being. Indeed, recent study has called attention to pleasure mechanisms as predictors of organic food consumption (e.g., Cao, Zheng & Li, 2024). In a similar fashion, Nguyen et al. (2024) explored

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the OFC-SWB link by examining the subjective well-being impact on pro-environmental consumption behaviors. However, the authors' conclusion describes the role of moderators (e.g., environmental concerns) in explaining the OFC-SWB relationship. In complement, mediators like consumers' expectations for quality attributes and sustainability can influence the relationship between organic food purchase decisions and the subjectively perceived benefits, as argued by Martini et al. (2024), based on a qualitative study of Italian consumers. In dialogue with these previous studies, we concentrate efforts on exploring the boundary conditions between purchase decisions and subjective perception by exploring the concerns, ideological-related lifestyles, and subjective motivations that operate these boundary conditions.

Purpose of the paper. Based on the previous discussion, the current study aims to (i) advance the investigation on the non-cognitive process that acts as a possible mediator between organic food consumption and the consumer's perceived well-being, and (2) test the moderating role of additional variables not considered in previous studies, namely food-related lifestyle (FRLS), locavorism, environmental and health concerns. A conceptual model was developed based on the literature review. The proposed model is presented in Figure 1.

Methodology. The research was composed of four stages. First, a literature search was carried out to identify studies that had measured the constructs of this research. Following the literature search, we filtered a set of empirical studies that supply consistent scales to measure each construct.

Second, we structured the questionnaire and the scale items for each construct of the proposed model, as described below:

Organic food consumption was measured by four questions that evaluated the individual's behavior regarding the purchase and consumption of organic foods, namely: a) How many times a month do you usually buy organic food? (median = 4); b) On average, how much money do you spend monthly on organic food? (median = US\$ 24); c) How long have you been thinking about organic food as an option? (median = 3.0 years); d) Which of these organic foods do you buy most often? (list with 17 options). A scale was created that first added the answers (min = 1; max = 17; median = 6) and then standardized with a z score.

The reported behavior of organic consumption was preferred, rather than the commonly used behavioral intentions, to minimize the common method bias (MacKenzie and Podsakoff 2012), using the same approach as Bravo et al (2013). Other studies have also adopted a similar approach, i.e., measuring the reported behavior construct (Azzurra et al. 2019; Nam 2020; Pestek et al. 2018; Liang 2014). Each item on this scale was converted to a z score to standardize the scale (Malhotra and Birks 2007).

Well-being was measured at the beginning of the questionnaire with 7 questions, on a scale varying from 1 = no part of the time, to 7 = all the time. The anchor was "In the last 30 days, to what extent did you feel..." and the items were Happy, In a good mood, Extremely happy, Calm, Pacific, Satisfied. The seventh item was, "In general, how do you rate your satisfaction with your life? (Terrible 1 2 3 4 5 6 7 8 9 10 Excellent). This scale was adapted from Howell et al. (2013).

Self-enhancement was measured by 4 items adapted from Gong (2018), on a Likert scale (1 = completely disagree; 7 = completely agree), with the following statements: I feel excited when I buy organic products, My self-esteem improves when I buy organic food, I have more respect for myself when I buy organic products, Buying organic food makes me feel good in front of other people.

Food-related lifestyle (FRLS) was measured by 4 items adapted from the scale of Wycherley (2008). We focused on the dimension of "ways of shopping" because it provides content for the cognitive evaluations/beliefs regarding food consumption. A seven-point Likert scale was used with 1 = completely disagree and 7 = completely agree. The following items were used: a) For me, information about food is very important. I need to know what the food contains; b) I usually read and compare the labels of different brands before deciding on a purchase; c) Shopping for food is fun for me (reverse); d) I usually make a shopping list before going to buy food.

Locavorism was measured by 3 items adapted from Reich, Beck, and Price (2018), with the following statements: a) Food produced locally (e.g. your city) is more nutritious than those that arrive from other regions or outside the country; b) I don't trust foods that were produced by large companies (e.g. multinationals); c) I like to support local farmers whenever possible. Responses were given on a seven-point Likert scale.

Health concern was measured by 3 questions, using a seven-point Likert scale, based on Guilabert and Wood (2012) with the items: a) I worry about health risks and try to take steps to avoid them; b) I try to avoid health problems before I experience any symptoms; c) I care about the nutritional value of the food.

Finally, environmental concern was measured by 3 questions, based on a seven-point Likert scale, from Chen (2007), with the items: It is important to me that the food I eat daily has been ... a) prepared in a way that does not harm the environment; b) ... produced in a way that did not upset the balance of nature; c) ... packaged in an environmentally friendly manner.

The final section of the questionnaire included demographic data such as age, gender, income, and education level.

We pre-test the questionnaire with ten organic food consumers before starting the data collection. Finally, it was applied to a sample of food buyers at an organic farmers market in Porto Alegre, the capital city of the southern state of Rio Grande do Sul in Brazil. The south of Brazil is a relevant context to study organic food consumption because this region has a higher level of organic food consumption than other Brazilian areas (Organis, 2022). This market is a premier marketplace for organic food, where both farmers and consumers are connected with agroecological principles involving environmental concerns (Dalmoro et al. 2020). Data were collected from a non-probabilistic sample of consumers who agreed to answer the questionnaire while visiting the farmer's market. In collecting data in a real scenario of organic food shopping, we could access real organic consumers, fostering external validity. The questionnaire was

available on tablets, and participants self-completed the questionnaires after instructions from the researchers. The survey obtained a sample of 581 participants.

In the third stage, data preparation was carried out. After checking for missing and outliers, 2 cases were discarded. Therefore, a total of 579 participants were analyzed in the following steps. Then the reliability of the scales was analyzed. Overall, all scales achieved Cronbach's alphas greater than 0.60, thus supporting the reliability criteria (Malhotra and Birks 2007). Only in the organic food consumption factor, the Cronbach's alpha was relatively lower (0.63), which is consistent with the argument that formative scales do not follow the logic of inter-item correlations and, hence, Cronbach's alpha is not a requirement (Jarvis et al. 2003).

Finally, in the fourth step, our study presents the descriptive statistics and sample profile, correlation analysis, and the test of the proposed model. Data were analyzed using SPSS and the Partial Least Square (PLS) technique for structural equation modelling.

Results. The sample was represented by 60% female; 38% between 21 and 30 years old, followed by the group between 31 and 40 years old (21%). There was similar participation of single individuals (46%) or in a stable relationship (44%). A total of 54% had completed college or postgraduate education. A total of 42% of the sample has a personal income of up to US\$ 400 per month, and 77% had an income of up to US\$ 1,000 per month.

The dependent variable of this study, the consumption of organic food showed that on average, the participants purchased four times a month. Regarding the monthly expenditure on organic foods, a median of 24 dollars was observed, indicating that half of the sample spends at least 24 dollars per month on organic foods. Overall, the participants have a good experience purchasing organic food, since 50% or more started thinking about organic food at least three years ago. The average for this item was 5.8 years. On average, six items out of the seventeen presented, were purchased more frequently, namely: bananas (71%), tomatoes (62%), lettuce (60%), carrots (54%), eggs (50%), broccoli (46%), and apples (40%).

An analysis of the correlations indicated that the organic-food consumption score presented a significant correlation with all the remaining variables, with stronger values for environmental concern (.36) and health concern (.32), with all correlations significant at the 0.01 level (see Table 1). The same was true for well-being, which presented higher correlations with health concern (.23) and FRLS (.23). Locavorism presented relatively higher correlations with self-enhancement (.52) and environmental concern (.50).

Tab. 1: Correlations

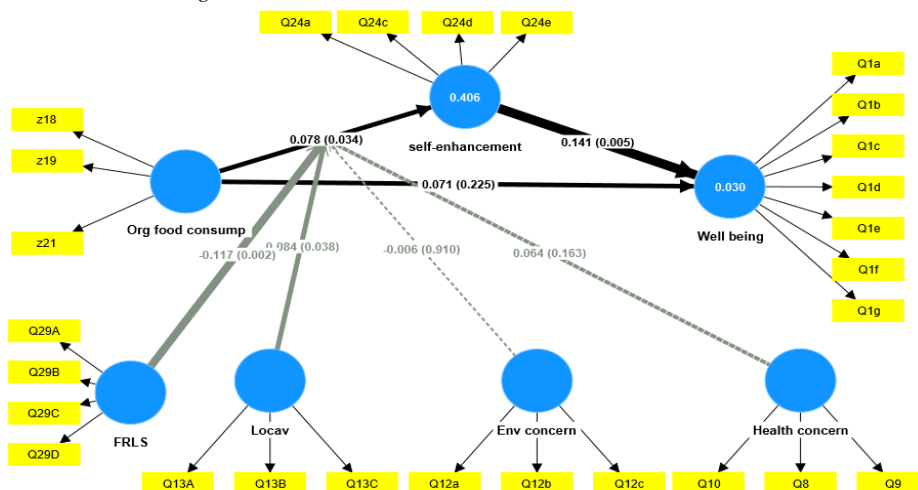
	1	2	3	4	5	6	7
1. Wellbeing	1						
2. Organic food consumption	.12**	1					
3. Self enhancement	.14**	.23**	1				
4. FRLS-ways of shopping	.23**	.14**	.37**	1			
5. Locavorism	.17**	.28**	.52**	.26**	1		
6. Health concern	.23**	.32**	.33**	.29**	.32**	1	
7. Environmental concern	.17**	.36**	.46**	.29**	.50**	.36**	1

Note - ** correlation is significant at the 0.01 level; FRLS = food-related lifestyles

Based on these findings, the following analysis was to test the structural relationships between the variables, as predicted by the proposed model (see Figure 1). From the main findings of the model test, we can highlight four issues.

First, self-enhancement was a significant full mediator between organic food consumption and well-being, especially because the direct effect was not significant.

Fig. 1: Theoretical Framework and Structural Model



Second, FRLS presented a significant moderating effect, with a negative coefficient suggesting an attenuation effect, i.e., that the higher the evaluations in FRLS (meaning greater cognitive aspects, such as product information) the lower the influence of the organic food consumption in the self-enhancement, which is in agreement with expectations. In other words, for those customers of organic food who follow a more cognitive route (give high importance to product information), there will be a smaller influence of organic food consumption on self-enhancement, which is in agreement with the “label effect” proposed by Apaolaza et al. (2018).

Third, locavorism was also a significant moderator in the link between organic food consumption and self-enhancement. The positive coefficient suggests that locavorism strengthens the influence of organic food consumption on self-enhancement, i.e. the higher the locavorism, the stronger the link between OFC and self-enhancement.

Finally, health concerns and environmental concerns, on the other hand, did not present significant moderating effects.

Research limitations. Finally, the current research also has some limitations. For example, only farmers’ market shoppers were surveyed. Future studies may also include consumers in different purchasing contexts, such as supermarkets. For that, researchers can explore specific mediators like the role of conspicuous consumption, given that organic food is usually positioned as a premium product. In addition, the observational approach (survey) could be complemented with additional studies based on an explanatory strategy (experiment) by manipulating the moderators/mediators of the proposed model, as well as different scenarios for organic food purchases.

Managerial implications. Considering the implications for practice, there are two main aspects here that could be highlighted. First, the promotion of organic food could work to increase the consumer knowledge about the origin of the food, since higher importance given to the food produced locally (locavorism) is associated with higher organic food consumption. Second, the promotion of organic food could also use the peripheral route of advertising (Petty & Cacioppo, 2012), making use of positive emotions, for instance, and calling attention to the fact that organic food is not only healthy but makes you feel better.

Originality of the paper. Previous studies have demonstrated the influence of organic food consumption on consumers’ well-being (OFC-SWB). The current research addresses this issue and advances the discussion in two different ways. First, the model tested in this study examines moderators (i.e. food-related lifestyle and locavorism) that have not been analyzed in previous research about the OFC-SWB relationship. Second, the model also contributes to the extant literature by investigating the non-cognitive process (e.g. label effect) that acts as a mediator between organic food consumption and the consumer’s perceived well-being and thus supports the role of self-enhancement as a mediator in the OFC-SWB link.

As a final remark, our study details the ‘circumstances’ that explain the association between happiness and pleasure (Apaolaza et al. (2018) related to organic food consumption (Nguyen et al. 2024). In particular, the boundary conditions between OFC-SWB are not supported by itself, but improved by a set of mediators and moderators that influence the relationship. In the case of organic food consumption, ideological-related lifestyles (FRLS and locavorism) and subjective motivations (self-enhancement) have a higher impact on this boundary condition than individual concerns.

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An improved framework for social sustainability: a bottom-up approach to boost social innovation and sustain employability

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Abstract

This short paper presents a framework to social sustainability that sees bottom-up activities and projects as a necessary starting point to reach social innovation. The contribution is structured in three parts. In the first one, the concept of sustainability is presented, based on its three main pillars, social, economic and environmental facets. The evolution of the relation between these three aspects is also discussed. The second part presents the first theoretical framework based on this definition and then suggests a modification to include the topic of co-creation and participation of the community, which has been until now almost always considered only as the mere recipient of social innovation actions. A practical example is then given, in the third part, to demonstrate that when the community is actively involved in every step of the process, social sustainability actions lead to social innovation. The objectives, methodologies and strategies of this approach are briefly described, as part of a larger funded research project, the WELLTS project (Work Employment Labor Logic Talent Scope), which aims to analyse the main changes that technology is creating in terms of workplace and social sustainability.

Key words: social sustainability; well-being; social innovation; open innovation; bottom-up approach; people-led; participation

Framing of the research. *The concept and definition of the term sustainability has increasingly become a global challenge (Heilman et al., 2021). In September 2015, 193 countries gathered to define and adopt the 17 Sustainable Development Goals (SDGs) of the 2030 Agenda for Sustainable Development. This led to the construction of European policy guidelines that consider the SDGs and recognize the fundamental role and benefits that innovation and creativity offer for economic and social growth (UNDP, 2015). The 2030 Agenda for Sustainable Development is based on the five P-keywords: People, Planet, Prosperity, Peace, and Partnership (Fourati-Jamoussi et al., 2021).*

Historically, the concept of sustainable development was first defined in the 1987 Brundtland Report as the development that meets the needs of present generations without compromising the ability of future generations to reach their own (Brundtland, 1987). Three are the fundamental pillars of sustainable development: environmental sustainability, economic sustainability, and social sustainability (Purvis et al., 2021; Amaral et al., 2023). Social sustainability, in particular, intersects the dimensions of well-being, social equity, access to social and health services and education, fair income distribution, good working conditions, equality of rights, social cohesion and inclusion, accountability and participation in policy making (Ly et al., 2023).

Over the years, the relative importance attributed to the three pillars of sustainable development has, however, changed (Colantonio, 2009; Yolles, 2018) as shown in Figure 1.

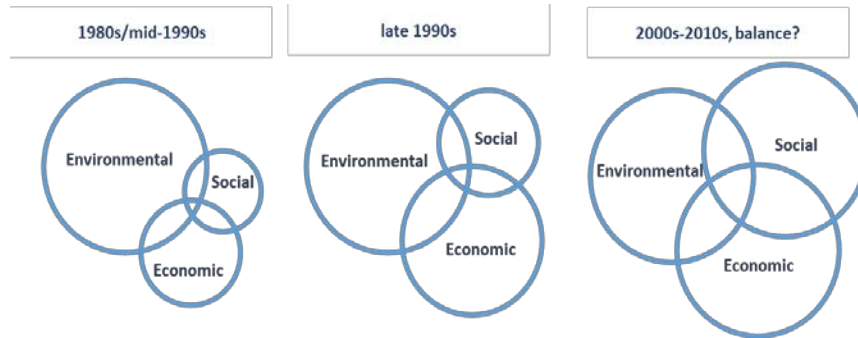
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Fig. 1: Time evolution of the three pillars of the social sustainability



Source: Colantonio, 2009.

Before 2010, when a balance was achieved, the importance of the social innovation was always less than of the other two. According to Colantonio (2009), this phenomenon can be explained both by the difficulty of applying and understanding the characteristics of social sustainability, and because it is always marginalized by a society historically rooted in specific forms of environmentalism based on global capitalism models (Colantonio, 2009; Boström, 2012; Bottero et al., 2019).

Besides, there is still a lack of a clear and broadly accepted definition of the concept of “social sustainability”, despite the frequent use of this term in academic literature and political debates (Licht et al., 2021; Corsini et al., 2021). For example, Vallance et al. (2011) argue that the concept of social sustainability is in chaos, and this is seriously undermining its importance and usefulness. In contrast, Boström (2012) argues that the vagueness and flexibility of the interpretation of the concept cannot be completely overcome, but it is precisely this characteristic that has facilitated communication between stakeholders with a common interest, making it the conceptual tool that brings together various actors. Shirazi and Keivani (2019) argue that social sustainability acts as an empty signifier - it performs a task of organization within social discourse, but it lacks a definitive content. Lee and Jung (2019) add that following the evolution of the scope and interests of people and society may be more important to the discussion and actions than determining how to define social sustainability (Eizenberg et al., 2017).

The main challenge is that it is unclear how social sustainability relates to the other two pillars of sustainable development or to other social development issues (Martynov, 2020). The lack of a defined conceptual framework has led to a large increase in academic articles and studies since the late 1990s (Giddings et al., 2002; Litting et al., 2005; Hervani et al., 2017; Baranauskas et al., 2022). Furthermore, many works have highlighted that the division of sustainability into three dimensions (economics, environmental and social) is a limited and insufficient response to global problems. Different scholars have thus focussed on four/five dimensions in this field (Seghezze, 2009; Iordache, 2018, Grindheim et al., 2020; Najjar, 2022). Other papers have suggested a purely social vision, where environments and economies are transformed and considered only on the basis of the needs and desires of the community (Deigh et al., 2026; Alaimo et al., 2020).

Despite the proliferation of both theoretical and empirical works on social sustainability and its connection to the other pillars of sustainable development, it is only in 2016, with the work of Boyer et al. (2016, hereafter B16), that a clear theoretical foundation and a general framework on social sustainability are outlined. The work starts from recognising the ambiguity that surrounds social sustainability, compared to the other pillars of sustainability. Therefore, the main objective of B16 is to contextualise social sustainability within the general framework of sustainable development, and, above all, to start an interdisciplinary conversation on the major global problems of the 21st century (climate change, energy transition, etc.). Actually, the paper criticizes the three-pillars’ (economic, environmental, social) model of sustainability, considering it too simplistic and potentially misleading. The authors argue that, even today, this model often relegates social sustainability to a secondary element compared to the economy and the environment, neglecting its complexity and interconnection with the other pillars. B16 recommends instead an “integrated approach” that considers social sustainability as a central concept and intrinsically connected to the other aspects of sustainability, and therefore leads to the development of holistic solutions that simultaneously consider social and economic needs, justice, environment and human capabilities. This approach is based on the idea that in order to respond adequately to the presence of multiple realities, multiple social approaches were needed.

In summary, in order to respond adequately to the presence of multiple realities, multiple social approaches are needed. Starting from this assumption, B16 constructs five different typologies of applications of the social dimension in real contexts, reconsidering the role of social sustainability, its degree of integration and its relation to the environmental and economic pillars. For each typology, the paper outlines the main aspects (such as the objectives which need to be achieved) and the procedural aspects (how to achieve them) of sustainable development.

The five different roles for social sustainability in the broader picture of sustainability in general, presented by B16, are listed below:

1) Social sustainability is seen as an autonomous pillar separate from the dimensions of environmental and economic sustainability;

2) Social sustainability is perceived as a constraint for the economic and environmental pillars: sustainable development in this case is considered a process of reconciliation between the conflicting priorities of social equity, economic development and environmental protection;

3) Social sustainability is considered as the foundation for the other pillars, because it constitutes the stock of social capital necessary for economic and environmental development, allowing to compensate for its criticalities and shortcomings;

4) Social sustainability is seen as a stimulus for economic and environmental progress and as a causal mechanism for environmental and economic change because it is capable of promoting alternative ways of thinking, interacting or governing;

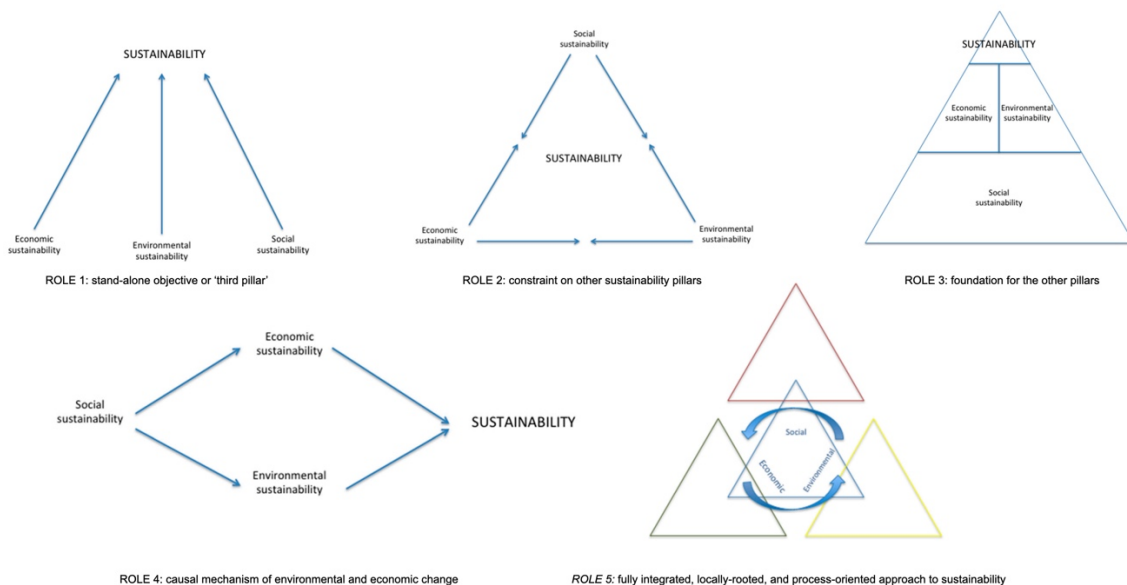
5) Social sustainability is perceived as fully integrated, locally-rooted, and process-oriented approach to sustainability for the development of communities and territories.

The paper states that there is the need to promote these five approaches to social sustainability in order to open a dialogue that can help researchers, professionals, and policymakers to define and apply the concept in a clearer and complete way.

Initiating an inter-disciplinary discussion which could lead to a definition of the social sustainability, is the main aim of this paper which, starting from the analysis in B16, proposes a modified version of its last approach (social sustainability as a process of integrated development of communities and territories) that better reflects on how to achieve social development with bottom-up social innovation practices.

A schematic view of the 5 approaches is shown in Figure 2, which is a summary of the 5 different figures in B16.

Fig. 2: The five different roles that social sustainability can have according to B16



Source: Boyer, Peterson, Arora, Caldwell, 2016.

Purpose of the paper. Although several studies have focussed on social sustainability and innovation (Souto, 2021), the relationship between the innovation and sustainability processes is neither obvious nor simple to be explored. To face the upcoming challenges towards a sustainable future and local development, policymakers and researchers are increasingly attributing a key role to people and their well-being (Kalkanci et al., 2018). However, the community is still too often considered only as the recipient of sustainable interventions and actions. The bottom-up approach to social innovation, i.e. that born directly from the citizens themselves, instead represents a model able to obtain effective results in terms of social and cultural progress, as well as economic and environmental insights (Puerari et al., 2018).

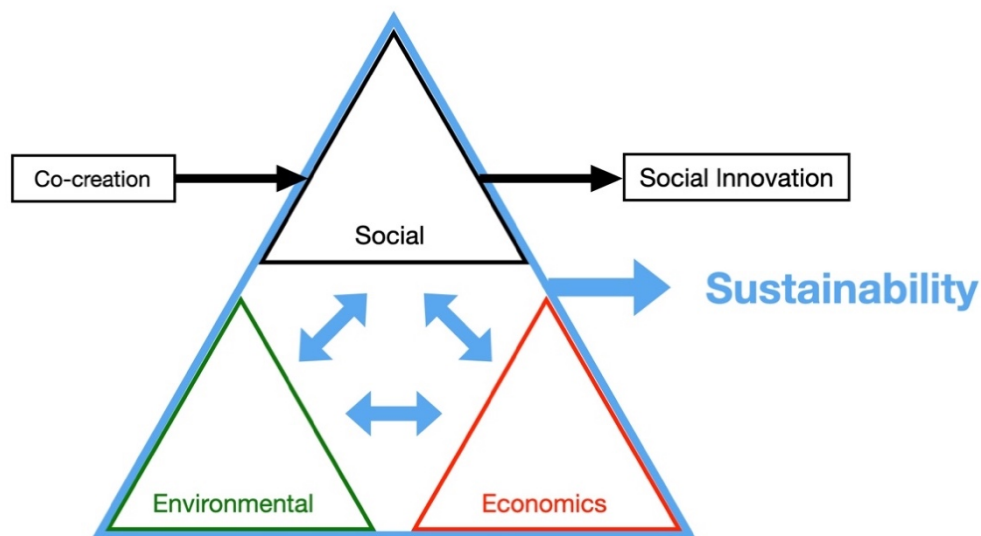
In light of these considerations, this paper proposes a modification of the 5th theoretical framework presented by B16, in which the social sustainability is a fully integrated, locally-rooted, and process-oriented approach to sustainability. The new framework introduced here, adds the fundamental concept of co-creation as the power behind each successful social sustainability action which automatically leads to social innovation (Grosse et al., 2020). The importance of the participation's aspect has been affirmed by the European Commission, according to this concept, the local human capital should take place in every single step of the sustainable development planning process.

In line with B16, the paper highlights that for each of the three pillars there are different agents with unique perspectives that must negotiate with each other. One of these agents is indeed the community, that should participate in all the phases of the planning, creation and realization of social innovation and territorial regeneration projects. Only in

this way, social, economic, and environmental priorities can aim to affect the experience of individuals. The framework is schematically shown in Figure 3.

Within the new framework, this conceptual study intends to investigate, starting from a specific case study's analysis, how fundamental for sustainability and social innovation is that the community plays an active role in the co-creation, planning and implementation of such interventions. This people-led approach is based on the collaboration of different social actors and stakeholders with different priorities and interests, but with the common goal of attaining sustainable development. The primary starting point is that the community activates itself "from below" with actions and practices of social innovation from which it will itself benefit, and which will automatically and naturally lead to social sustainability and sustainable innovation.

Fig. 3: A modification to the 5th framework by B16.



Source: Authors' elaboration based on B16. (The inter-connection of the three different pillars, represented by three triangles (environmental in green, economics in red and social in black) is the most effective way to reach sustainability (big light blue triangle). The black arrows entering and exiting the triangle of social sustainability represent causal mechanism and implication, respectively).

Methodology. The paper shows a conceptual study, setting the basis for an interdisciplinary discussion on the role and definition of social sustainability in the broader context of sustainability and social innovation. While empirical studies focus on collecting primary data from the real world, this research is based on a first intentional integration of previous theoretical results. Hence, a conceptual research design was adopted, in line with the scheme offered by Jaakkola (2020). As suggested before, a conceptual approach allows the creation of a bridge between different theoretical frameworks in an innovative way, thus broadening our understanding of a particular problem and triggering discussion and further research. However, since the "integrated approach" proposed by B16, assumes that the social approach is strictly linked to and dependent on the reality being analysed, in this study the discussion is also contextualized to the case of *Officina Keller*. This is an urban regeneration project carried out by the homonymous cultural and creative industry that has been operating in Naples since 2011 (*Officina Keller Napoli, OKN, 2011*). This project represents an important example of how people-led social innovation practices can be an important and concrete starting point to boost economic, social, and environmental development processes with a completely bottom-up approach.

Results. The historic centre of Naples is part of the World Heritage List. The strategy of the Municipality of Naples, with the Great UNESCO Project, has proposed, since 2007, a program of urban regeneration characterized by a strong integration of urban policies with those for social inclusion, social well-being and legality and security. The Great UNESCO project is divided into several blocks: some of them aimed at realising structural interventions and regeneration of the historic centre, other focusing on mitigating social discomfort, security problems, and improving the economic and social conditions of the inhabitants (*Great UNESCO Project, 2007*). This program, therefore, fits perfectly into the framework described by B16, which sees social sustainability as a process of integrated development of communities and territory. However, although representing a good step forward, the project has not achieved the desired results as the social and economic condition of the area is still problematic. The main reason for the 'partial' failure of this program, apparently excellent, is due to the fact that the regeneration actions were based on a top-down approach, i.e. planned, decided and carried out by the Municipality, without any confrontation with the inhabitants of Naples, that had no direct and only weak involvement in the decision-making and creative process.

OKN, on the other hand, has undertaken an opposite approach, realizing regeneration and innovation actions with a strong bottom-up connotation (Sica, 2022). The *Officina Keller* project starts from a territorial requalification, set and carried out by members of the local community: that of the recovery of the cloister of Santa Caterina a Formiello and the

area of the former wool mill (*Lanificio*) at *Porta Capuana* (Arcidiacono, 2017). Starting from the artistic and cultural vocation, OKN built a creative, artistic, and cultural hub, which is today a real workshop of ideas in which it is possible to share knowledge and promote the training and participation of numerous professional figures active in the sector of culture, training and economy. Specifically, the *Officina Keller* project has restored 3000 square meters of one of the most important examples of the Neapolitan Renaissance, which used to be wholesale shopping center in the second half of the century and then became a neglected place. At the same time, OKN has contributed to the creation of a high-level training school for craftsmanship and the realization of 11 residences for artists in-loco. In doing so, *Officina Keller* is currently the only regeneration project that has returned the regenerated space to the community, thus favouring the spread of an 'active' network within the *Lanificio* area. In addition to involving artisans scattered throughout the territory, also recovering a 'doing' capacity typical of the quality of *Made in Italy*, OKN, thanks also to the partnership with the social cooperative 'Dedalus' and 'Officine Gomitoli', has proposed, and still proposes, a series of active internships and school-workshops for young people from risky social groups (Sica, 2022). The project is thus able to intercept two increasingly disruptive problems, that of premature training/school dropout and the lack of integration into the world of employment. The idea is that for each job order a craftsman 'adopts' one or more individual to support them and involve them in his/her work. In this way, the objectives of reconversion and urban regeneration pursued by OKN are achieved not only through the revaluation of craftsmanship, but also and above all, through the creation of a new highly specialized workforce.

In conclusion, we believe that the vision of OKN is a multi-level one, both in terms of planning and policy, which determines high potential for sustainable development from social innovation and generating economic, territorial, environmental/digital innovation. The *Officina Keller* project demonstrates the potential of a bottom-up approach to urban regeneration and social innovation. The project has been successful in bringing together different stakeholders, including local residents, businesses, and government agencies, to work together and create a more sustainable community. The project has also been successful in generating economic, social, and environmental benefits. For example, the project has created jobs, improved the quality of life for local residents, and reduced environmental pollution. The *Officina Keller* project provides a valuable model for other communities that are seeking to create a sustainable future. The project demonstrates the importance of involving the local community in the planning and implementation of regeneration projects. It also shows the potential of social innovation to address complex social and environmental challenges.

The goals of OKN - urban regeneration, social innovation and social reconversion - make it a virtuous space that not only aligns with the objectives of the Agenda 2030 and more generally with the current and future European political strategies, but even surpasses them by maintaining a bottom-up approach involving all the actors - formal and informal - of its local territory. In the same way, the example of *Officina Keller* not only reflects the fifth framework introduced by B16, but overcomes it, introducing the concepts of co-creation and participation (Itten, et al., 2021; Anthony, 2023).

Hence, the paper concludes that participation is the most effective way to fully involve the local population and to create an endogenous management of resources that takes into account the needs of the community and a series of shared objectives that are able to simplify the participations' processes, also in line with other recent works (Bindi, 2019). Sustainable and participatory development therefore focuses on the community itself, its needs, potential and resources, and therefore differs from the traditional approach to economic development. This latter, and even more specifically from the place-based approach, in which social sustainability is a process of integrated development of communities and territory, instead, tend to attract resources from outside (Palazzo et al., 2022) In the framework proposed here, with the bottom-up approach, is the community that actively contributes to the development of the territory. The main objective in this new framework is to enable a reference community, with its system of stakeholders, to self-improve its quality of life, and at the same time regenerate its territory in a sustainable way, hence also making economy prosper. For this reason, the 5th theoretical framework of B16 can be modified, considering social innovation as the main driver of sustainable development.

Research limitations and future investigation. Social sustainability is a fundamental objective for the future of our societies. However, research in this field presents several challenges and limitations. As already stressed, the lack of a unique and shared definition of social sustainability represents a significant obstacle: the multiplicity of definitions and interpretations of the concept makes it difficult to compare studies and evaluate impacts. Furthermore, the lack of a clear conceptual framework limits the ability to develop robust theoretical models and identify effective measurement indicators. Social innovation can play a key role in improving this situation provided that adequate research and implementation strategies are developed (Kumar et al, 2022).

This study presents the typical limitations of a conceptual paper, built on a purely deductive basis, starting from the literature available on the subject, which is however in most of the cases contrasting. Moreover, and most importantly, most of the works in the literature have focused on aspects of sustainability that considered the social pillar (people) only as recipients of the other two levers of development (economic and social). Therefore, a future research agenda could:

1) Further investigate these issues following the perspective offered here, namely, to consider social innovation and methodologies related to participation and bottom-up approach as starting points and motors for sustainable development;

2) Better characterise and deepen the interaction between social sustainability and other aspects of sustainability, such as economic and environmental sustainability;

- 3) Study the impact of new technologies (such as artificial intelligence and blockchain) on social sustainability;
- 4) Since the case of *Officina Keller* is still in a preliminary phase, it would be advisable to carry out field research that could be able to offer more detailed and specific data to improve the understanding of the phenomenon under analysis;
- 5) Last but not least, future research could focus on a diversified choice of empirical case studies.

Managerial implications. The results presented in this study affirm that inhabitants' participation in the planning, creation and realization of social innovation processes is the engine to social sustainability. This requires a fundamental change to the managerial approach to social sustainability and innovation projects, as the community must be able to manage and get involved in the projects at every single step (Marradi et al., 2022). Indeed, this methodological approach assigns a very important role to all those stakeholders that usually do not take part in the decision-making process, even though they are directly interested by interventions and actions. This is initially done through the activation of workshops, focus groups, and questionnaires that can be used to understand the needs and desires of the local inhabitants in order to plan interventions and co-create projects that allow for better and more concrete project results (Strasser et al., 2020).

Not only the competent administrations, investors, and designers, are involved in the participatory process, but also representatives of civil society, associations, and social groups. The "top-down" managerial approach, that involve decisions taken exclusively by the administrations with pre-defined and well-set aims, is reversed and complicated (Micozzi et al., 2021) The actors, in this bottom-up cases, are multiple, everyone with their own skills, needs and priorities, which might differ from these of others. Compromise and communication therefore become of fundamental importance in the managerial and decision-making process (Palazzo et al., 2017). However, it is not possible to create a dialogue between different actors if they do not speak the same language, if a common background is lacking. Hence, a possible future path for research could be to identify new required skills and investigate on the possible way to training the administrative apparatus to provide adequate support to citizens and, consequently, push them to undertake co-creation actions (Moons et al., 2021).

Therefore, it is important to put a strong emphasis on new types of skills and knowledge in the co-creation and management of collaborative spaces, to strengthen bottom-up and social innovation approaches and foster improvements in the social, cultural, economic and environmental scenario (Palazzo et al., 2020). A concrete example is provided by the WELLTS project (Work Employment Labor Logic Talent Scope), which aims to analyse the main changes that digital technology is creating in terms of workplace and socio-cultural innovation. Indeed, the study carried out in the WELLTS project highlights how the development of employees and professional roles is closely linked to the evolution of technologies and at the same time to the diversification of demand needs in different territories.

Originality of the paper. The study contributes to broadening the debate on the implications of social sustainability by focusing on the fact that sustainable development should start from the bottom and through social innovation carried forward by people. The thesis puts forward in this work states that bottom-up social innovation, i.e. coming from the citizens themselves, probably represents the best way to activate local communities and the participation of citizens in the dynamics of development, with consequent positive results in terms of social and cultural, as well as economic, progress (Sica, 2021). Furthermore, the paper considers innovation as a particularly important factor in promoting sustainable development systems that favour the balance between economic growth, social development, and the protection of "public goods", such as biodiversity and other environmental resources (Qasim et al., 2021). In this way, social sustainable innovation represents an emerging paradigm that aims to address the major challenges of our time through innovative, technological, co-created and lasting solutions. It is a holistic approach that integrates different disciplines and sectors, from technology to economics, from sociology to environmentalism, with the aim of creating positive change in society (Cooper et al., 2018).

This paper proposes a revisitation of the 5th B16 model, reaching a definition of sustainable social innovation. Starting from considering the social sustainability like a development process integrated to community and territory, according to the theory of B16, this paper suggests to modify the framework, adding the engine of co-participation and co-creation of social innovation and territorial regeneration processes, as a *conditio-sine-qua-no* for the social pillar of sustainability, which then integrates with the economic and environmental ones. The co-creation methodology does not only aim to achieve a specific result from the social innovation perspective. It is also a tool that allows us to re-think the very way in which the relations of power between the various subjects involved are managed, and how innovation can practically be applied to concrete situations to achieve social sustainability (Trischler et al., 2023). The participation of the community throughout the entire innovation process, starting from the ideation and design phases, allows one to broaden the perspective of institutions and companies, by listening to a plurality of other instances and needs. This contributes to an integrated and concrete approach to sustainable development and innovation activities. Specifically, the work describes a practical example of a bottom-up project for the redevelopment of a neighbourhood in the historic centre of Naples, and in particular of a historic building of great artistic value, the *Lanificio Borbonico*. In addition to regenerating the territory, *Officina Keller* has caused a huge change in the existing community, letting the community itself decide how best to use the space available. With a completely bottom-up approach, the project has achieved concrete results of sustainable and social innovation, succeeding where top-down actions had dramatically failed.

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Knowledge, self-perception and eco-sustainable behaviours. Inspiring actions in green learning

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Abstract

The study aims to examine the level of knowledge of sustainability understood in its triple dimension, economic, environmental and social, as well as investigate the gap between declared values and actual actions in the sustainable behaviour of students. This is addressed through an investigation into the individual perception of environmental responsibility and the actual adoption of sustainable behaviours, in order to evaluate to what extent the students, participating in a series of seminars on sustainability, internalize and translate the principles learned into concrete actions.

In line with thought of Hadjichambi and Paraskeva-Hadjichambis (2020) on the importance of sustainability education, the study focuses on the implementation of a training approach that emphasizes active and contextualized learning. The proposed series of seminars incorporates elements of investigation, planning, action, evaluation and reflection, with the aim of informing and making students more aware.

The survey method involves administering a questionnaire to a sample of students before, during and after the series of seminars on CSR and individual environmental responsibility. In future, it is planned to conduct a survey in Italy and other European countries in order to carry out a cross-cultural comparison.

Key words: education; sustainability; students; knowledge; perception; behaviour

Framing of the research. *In the decade between the 60s and 70s of the last century, the political debate on the environmental issue had as its central issue the relationship between economy and environment in the - increasingly evident - need to preserve the quality of the natural heritage and in the awareness that, as the planet's resources tend to be exhaustible, the models of socio-economic development should be reviewed and balanced (de Magalhães, 2023). In response to this need, the World Commission on Environment and Development introduced the concept of sustainable development in 1987 (Smyth, 2008); in the Brundtland report the concept was defined as "...development that meets the needs of the current generation without compromising the ability of future generations to meet their own needs" (WCED, 1987). This premise highlights that the commitment to promote sustainable development is based on three fundamental pillars: the environmental, the social and the economic which to be realized have gone through various phases, culminating in the significant international initiatives of Agenda 21, the Objectives of Millennium Development (MDG) and the 2030 Agenda with the 17 sustainable development goals (SDGs) (United Nations, 2021). It is a globally shared commitment among all nations aimed at eliminating poverty and other conditions of deprivation. The main goal is to combine strategic actions to improve health and education, reduce disparities and promote economic growth (Kanapathy et al., 2019).*

At the same time, this commitment is aimed at jointly addressing the challenges of climate change and ensuring the protection of oceans, forests and the environment as a whole (United Nations, 2023).

In recent years, awareness regarding sustainability issues has acquired an increasingly predominant position in global attention (Alsaati et al., 2020) as progress towards the set objectives has been slower than expected and, in some cases, the current situation is even worse than to the past: the global average temperature at the land and ocean surface during the period January-December 2023 was recorded with an increase of 1.18°C (2.12°F) compared to the 20th century average, standing at 13, 9°C (57.0°F). This is the highest overall temperature recorded globally in the period January-December 2023: each month, from June to December, recorded higher temperatures than the corresponding month of any previous year (LINDSEY R. & DAHLMAN L, 2024). Additionally, according to NOAA's 2023 Annual Climate Report, combined land and ocean temperatures have averaged an increase of 0.06°C (0.11°F) per decade since

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1850, or about 2°F in total, and the rate of warming since 1982 is more than three times higher: 0.20°C (0.36°F) per decade (NOAA National Centers for Environmental Information, 2024). It is clear from the report that human activities, especially through greenhouse gas emissions, have undeniably contributed to global warming, causing global surface temperatures to exceed 1.1°C above 1850-1900 levels in the period 2011-2020 (NOAA National Centers for Environmental Information, 2024). The future level of global warming will be determined by the amount of carbon dioxide and other greenhouse gases released in the coming decades. Currently, our activities, such as the burning of fossil fuels and, to a lesser extent, deforestation, contribute around 11 billion tonnes of carbon per year (equivalent to just over 40 billion tonnes of carbon dioxide) to the atmosphere. This amount of carbon exceeds the capacity of natural removal processes, leading to a steady increase in the amount of atmospheric carbon dioxide each year (Global Carbon Project, 2023). In addition, August 2, 2023 was Earth Overshoot Day, calculated every year by the Global Footprint Network using data from the National Footprint and Biocapacity Accounts (Global Carbon Project, 2023) which indicates the official exhaustion of the renewable resources that the Planet is able to offer within a year. This means that on August 2, humanity had already “finished” all the resources that nature produces in an entire year, starting to accumulate an ecological debt. With over 8 billion inhabitants, humanity consumes in excess of the planet’s natural regeneration and reabsorption capacities. In 1973, Overshoot Day fell on December 3, exceeding the annual budget by a few days. In 2003, September 12; in 2013, on August 3. The date is constantly brought forward, highlighting an increase in our ecological debt over time. Globally, we are consuming the equivalent of 1.7 Planets per year, a worrying figure that is expected to increase to two Planets by 2030, according to current trends (WWF, 2023). Over the past 5 years, the trend appears to have stabilized, but it is complex to determine whether this is due to the slowing economy or decarbonization efforts. To reach the goal set by the United Nations IPCC of reducing greenhouse gas emissions globally by 43% by 2030 (compared to 2010), it would be necessary to postpone Earth Overshoot Day by 19 days per year for following seven years (WWF, 2023).

It’s clear that no country is progressing adequately towards achieving the Sustainable Development Goals by 2030. We find ourselves in a “value-action gap”, that is, an observed discrepancy between the concerns expressed by people regarding the main environmental, social, economic or ethical and the lifestyle choices or purchasing decisions they actually put into practice (Flynn et al., 2009). In this regard, Barr & Gilg (2006) examined the gap between value and action among citizens who adopt sustainable lifestyles, such as energy saving, waste recycling, water conservation and “green” consumption. Their results highlighted significant differences not only between distinct groups (committed environmentalists, traditional environmentalists, occasional environmentalists and non-environmentalists), but also in their levels of commitment, influenced by deep social values. They also highlight that people’s predisposition to take environmental actions is rooted in and conditioned by their existing domestic lifestyle and daily experiences.

Consequently, it becomes evident that in addressing the apparent challenge of a mismatch between people’s opinions and perspectives on environmental problems and their ability and willingness to act to improve them, there are considerable conceptual and methodological challenges within academic training. Therefore, in order to achieve sustainability goals, it is essential that an individual’s perception and behaviour towards sustainability undergo a transformation, which can be achieved through education (Kanapathy et al., 2019).

The Tbilisi Intergovernmental Conference in 1977, through the Belgrade Charter, establishes the objectives of environmental education, aiming to “develop a world population aware of and interested in the environment and related problems, equipped with knowledge, skills, attitudes, motivations and commitment necessary to work both individually and collectively to resolve current problems and prevent future ones” (UNESCO, 1977).

This approach and the proposed sustainable model have been a source of inspiration for environmental educators, pushing them to constantly improve their teaching strategies and materials. The main objective of such efforts is to promote transformative action, focusing on the effective acquisition of critical knowledge and skills (Frisk E. & Larson K.L., 2011). Frisk E. & Larson K.L. (2011), in the field of environmental knowledge, identifying three distinct areas: declarative, procedural and effective knowledge. Declarative knowledge deals with the dynamics, interactions and impacts within the socio-ecological system; procedural knowledge includes information regarding local action strategies and processes aimed at change; finally, knowledge of effectiveness focuses on personal effectiveness and the consequences of actions taken (Frisk E. & Larson K.L., 2011).

Arguably these elements form the basis on which environmental educators should develop their pedagogical approach, working to refine teaching methodologies to ensure comprehensive learning and a deep awareness of environmental issues.

Environmental sustainability education emerged in the late 1960s, reflecting the environmental problems of the time (McKeown & Hopkins, 2003) and is regarded as an approach to teaching and learning aimed at developing knowledge and skills with a particular focus on behavioural change. At the heart of this approach is participatory and active citizenship, based on joint and co-created solutions, independent and autonomous thinking and learning to face a reality of change and uncertainty. The learning process can be conceived as transformative, mediated by a critical, open, pluralistic and democratic approach. An action competence approach aims to develop students’ ability, motivation and desire to play an active role in finding democratic solutions to the problems and challenges of environmental sustainable development (Brudermann et al., 2019).

The literature on sustainable learning is predominantly composed of studies that evaluate the behaviours reported by students or, in the best case scenario, explore their willingness to engage in pro-environmental actions (Malandrakis, 2022); however, the number of studies that effectively cultivate and promote students’ concrete and real-world action towards sustainability is limited (Bonnett, 2023).

This implies that the objective of Environmental Sustainability Education is not limited to a simple behavioural change in students but, rather, represents a teaching and learning process that enhances students' knowledge, skills and competences in sustainability (Bopardikar et al., 2023), resulting in a transformation in the way we think, feel and act regarding environmental issues and sustainable development (Alam, 2023).

Through sustainability education, we not only increase knowledge on this dimension, but also evaluate the perception of it and actual sustainable behaviours, in order to stimulate behavioural change towards sustainable consumption (Alam, 2022; Uralovich et al., 2023).

Environmental sustainability education could contribute to greater environmental knowledge, understood as the general understanding of facts, concepts or relationships regarding the surrounding environment and its ecosystems (Gericke et al., 2019; Mohiuddin et al., 2018) implying the understanding of fundamental relationships that can influence impacts in the surrounding environment. This could influence the perception of environmental sustainability, i.e. the mental process of individual interaction with the environment mediated through perceptive mechanisms and, in particular, cognitive mechanisms in the process of building environmental value for each individual (Vincenzi et al., 2018). The term "perception" refers to the act, process and result of actions related to understanding and interpreting a fact, phenomenon or reality. In this context, "realizing" a fact implies the ability to select it carefully, deepening its understanding rather than treating it superficially. Environmental perception can be described as a psychosocial phenomenon in which cognitive and emotional functions are involved in the representation of the environment, both at an individual and collective level (Schiano et al., 2020). Perception, therefore, constitutes the starting point in the process of acquiring knowledge, influencing both theoretical aspects and practical applications (Schutte & Bhullar, 2017).

The study of perception offers us multiple angles of approach, examining the processing process triggered by physical, chemical, environmental, social, psychological and emotional stimuli and considering effective, cultural and cognitive aspects (Kang & Bodenhausen, 2015). Similarly, one can analyse perception across various dimensions, ranging from subliminal perception to broader perceptual awareness, or from self-recognition (in one's inner world) to awareness of one's surroundings (in the outer world) (Schäufele & Hamm, 2017). It's important to underline that the connection between reality and perception is far from immediate (Chemero, 2003): the perceptual experience of an object does not represent a faithful copy of reality but, rather, a subjective representation, always limited and partial. According to Bronfenbrenner U. & Morris P. (1996) perception constitutes the set of processes that allow us to recognise, organize and give meaning to sensations coming from environmental stimuli. It's important to underline that these stimuli can originate from both the internal (individual) and external environment. In this context, sensations are processed and combined to form a mental representation of a perceived stimulus. Perception, being part of a cognitive process, does not develop in an isolated way, but is interconnected with other aspects of development such as affective, social and organic ones (Kang & Bodenhausen, 2015). Therefore, perception is closely linked to intelligence, a key element in the formation of concepts and in relation to beliefs, values, preferences and experiences (Gazzola et al., 2020). Furthermore, Gibson proposes a traditional definition of perception, which represents the extent to which environmental objects provide an information structure that ultimately reaches sensory receptors, leading to the internal identification of the object (Rookes P. & Willson J., 2005). His theory of direct perception, known as the ecological model, introduces the concept of affordances and argues that humans do not require superior cognitive processes to evaluate sensory and perceptual experiences. On the contrary, according to Rookes P. & Willson J. (2005) the perceptual process involves the construction of an initial internal representation of the stimulus, integrating sensory information with other sources of knowledge. In this context, learning takes on an important role; perception therefore becomes a dynamic process during which various hypotheses are formulated based on three main factors: sensory data, i.e. information coming from the senses; stored data, information previously acquired and retrieved from memory; constructed data, information inferred when cognitive processes operate at a higher level (Rookes P. & Willson J., 2005; Wagman J.B. & Blau J.J., 2019).

To optimize the effectiveness of perception, the environment must have an impact on the observer, manifesting itself with motivating or repulsive tones and giving this dynamic a level of emotional involvement (Wagman J.B. & Blau J.J., 2019): our mind organizes and represents sensory experiences, arising from perceptions captured through the senses, in a process in which vision stands out as a selective and creative process, intertwined with smell, touch, taste and hearing. No perception presents itself in a neutral manner; it is susceptible to both internal and external influences (Rookes P. & Willson J., 2005). Much of the perceptual process occurs unconsciously, starting from the assimilation of data, passing through representation, object recognition, the influence of the senses and perceptive judgments (Rookes P. & Willson J., 2005).

The perception of sustainability can have a significant impact on people's sustainable behaviours (Gazzola et al., 2020; Schäufele & Hamm, 2017). When people are aware and understand the importance of sustainability, they show a greater propensity to adopt behaviours aimed at reducing environmental impact and promoting sustainable practices (Kang & Bodenhausen, 2015). To fully understand this statement it is useful to analyse the theory of planned behaviour (Ajzen, 1991) which represents one of the most influential theories in predicting rational behaviour, founded on the theory of reasoned action (Fishbein & Ajzen, 1997). The latter maintains that an individual's intention to perform a certain behaviour is influenced both by his attitude towards that behaviour and by a subjective norm, relating to the perception of how others see his action. The resulting behavioural intention determines the actual execution of the behaviour.

Focusing on environmental behaviours, Hines et al. (1987) formulated the REB model, i.e. the model of Responsible Environmental Behaviour which explains how an individual's intention to act responsibly towards the environment depends mainly on a set of cognitive and personal variables, including knowledge of environmental issues, understanding of action strategies combined with implementation skills, attitudes, locus of control and personal responsibility. The intention, therefore, will result in effective environmentally responsible behaviour, unless situational factors prevent the individual from acting in accordance with that behaviour (Hines et al., 1987).

The concept of sustainable behaviour represents a global approach that promotes consumption aimed at preserving, protecting and promoting the well-being of the planet (Fabio & Croce, 2024; B. Wang & Udall, 2023). Sustainable behaviours are actions aimed at reducing the use of natural resources in products, contributing to a lower environmental footprint (White R. L. et al., 2019).

In the field of psych-environmental studies, researchers have examined several sustainable behaviours, including recycling, composting, waste management, water conservation, energy saving practices, reading about environmental topics, and participating in planning and eco-sustainable construction, as well as the conservation of ecosystems, among others (Vesely et al., 2022; Q. Wang et al., 2023). The authors specifically identify three phases of sustainable behaviour faced by consumers: the purchasing phase, the consumption phase, and the disposal phase. At the purchasing stage, consumers can choose eco-friendly products, opt for used items or consider rental options. In the consumption phase, behaviours aimed at reducing the overall consumption of resources (for example, electricity, water, energy) become relevant. In the disposal phase, recycling is the most consolidated behaviour (Vesely et al., 2022; Q. Wang et al., 2023).

Consistent with the analysis of students' knowledge, perception and behaviour towards sustainability, the Science of Sustainability (Sipos et al., 2008) highlights that the Head, Hands and Heart (HHH) approach is configured as a methodological paradigm that can be adopted by educators to evaluate performance of the students.

This multidimensional approach is designed to comprehensively capture the interconnection between the cognitive dimension (the "head"), the psychomotor dimension (the "hands") and the emotional dimension (the "heart") of students in the context of issues related to sustainability. In this regard, Klapper & Fayolle, 2023 speak of "sustainable transformative learning" emphasizing the educational experience aimed at the metamorphosis of the students' personality, directing it towards a mentality and behaviour oriented towards solving the challenges that require social restructuring. The term "sustainable" is introduced because, through this process, students develop the ability to apply new skills in activities that respect the principles of environmental, social and economic sustainability; in other words, they become agents of improvement in the world, acting more effectively and oriented towards the common good, developing a perspective that redefines the way we address problems (Klapper Rita & Zitek A., 2023).

To achieve these objectives, three different types of pedagogical activities can be used, highlighting the operational and emotional dimensions of learning: art-based creative activities to stimulate students' creativity and encourage artistic expression as a vehicle for the learning process; practice-based activities to connect theory to concrete experience, allowing students to apply their knowledge in real situations; contemplative and reflective activities to develop students' emotional awareness and understanding (Klapper, 2022).

Through this approach we intend to provide a complete education that involves students in a meaningful way, stimulating their creative, practical and emotional faculties.

Purpose of the paper. Universities are the main drivers for promoting understanding of sustainability and shaping tomorrow's leaders for a sustainable future for all (Msengi et al., 2019) through research, teaching and practices (Brudermann et al., 2019).

The achievement of sustainable scenarios depends on the individual ability to make changes that favour behaviours that are less harmful to the environment. To effectively promote such changes, it is essential to understand the self- and context-perception of individuals who adopt behaviours related to environmental sustainability. A more in-depth analysis of these self-perceptions and perceptions of the environment adds value, offering foundations for interventions aimed at promoting a sustainable environment.

Therefore, this study aims to examine in detail the level of knowledge of sustainability of university students, exploring the economic, environmental and social dimensions. A key objective is to analyse the gap between the values declared by students and the actions actually taken regarding sustainable behaviour. The research will focus on identifying individual perceptions of environmental responsibility and the actual adoption of sustainable practices. It will be assessed to what extent the students, by participating in a series of seminars on sustainability, integrate and translate the principles learned into concrete actions, contributing to the process of transformation towards a more sustainable lifestyle. It is imperative to integrate aspects of sustainability into academic education, allowing students to fully understand the impact of their daily actions on environmental degradation. This integration also fosters a critical awareness of the intrinsic link between environmental, economic and social issues, pushing students to actively influence their environment as responsible citizens, both locally and globally (Tang, 2018). In this context, universities play a crucial role in helping to solve one of the pre-eminent challenges for a sustainable future (Azhar et al., 2022).

Methodology. In order to explore students' knowledge, perception and behaviours related to environmental sustainability, our study focuses on the implementation of a training approach that highlights active and contextualized learning. The proposed series of seminars integrates elements of investigation, planning, action, evaluation and reflection, with the aim of informing and increasing students' awareness, in line with the Head, Hands and Heart (HHH) methodological approach. For the investigation phase, a questionnaire was administered to a sample of 150 students before, during and after the series of seminars, focusing on CSR issues, in particular on individual environmental responsibility. The designed questionnaire includes a total of 30 closed-ended questions, divided into four sections:

demographic profile, knowledge of sustainability (7 items), perception of environmental sustainability (9 items) and sustainable behaviours (9 items). Each item was rated using a 7-point Likert scale, where 1 = strongly disagree and 7 = strongly agree. The measurement of knowledge on environmental sustainability involved items taken from the Questionnaire on Sustainability Awareness (Gericke et al., 2019) and Sustainability Knowledge regarding eco-friendly vehicles (Mohiuddin et al., 2018). Students' perceptions were assessed using an adapted version of the Environmental Attitude Questionnaire (EAQ) by Tuncer (2008), already validated in the literature. Finally, sustainable behaviours were measured through the scale developed by Gericke et al., (2019) and, subsequently, by Fabio et al. (2024).

It is planned to conduct a study on environmental sustainability involving Italian participants. For data collection, we intend to use Microsoft Forms to create an online questionnaire in Italian. This survey will be disseminated among university students through e-mail transmission, with encouragement to participate and provide their valuable contribution. In the invitation message, an opportunity for direct communication with our research team will be included, with an invitation to students to contact us for any clarification, additional questions or further explanation regarding the questionnaire. Active collaboration with participants will be essential to ensure the quality and completeness of responses, as well as promoting informed and conscious participation in the study.

Results. Sustainability education activities are aligned with the United Nations Sustainable Development Agenda, in particular with Goals 4 and 13, which aim, respectively, to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all and take urgent measures with substantial impact to combat climate change and its consequences.

This research is conducted to evaluate students' knowledge, perception and behaviours towards sustainability. The main attention was paid to reducing the gap between knowledge on sustainability issues, students' perception of sustainability and their actual behaviours in daily life. Through a program of seminars on environmental sustainability education, the research offers a useful starting point for evaluating the positive effect of sustainable initiatives promoted by universities. A solid connection between seminar participation, perception of sustainability and actual sustainable behaviours is highlighted, indicating the importance of understanding sustainability issues and approval of sustainable programmes.

The analysis of the effectiveness of the seminars focuses on how much the students internalize and translate the principles learned into concrete actions, including expected changes in knowledge, attitudes and behaviours after participation in the seminars. This perspective reflects effective sustainability education, characterized by holistic systems, an ability to create connections, interdisciplinarity and lateral rigor guiding students towards more sustainable practices. Indeed, it is expected that students, through effective participation, will be able to connect sustainability issues to current realities and show a positive attitude in implementing sustainable behaviours to improve the present and future conditions of the planet.

Research limitations. This investigation highlights some limitations. First of all, it's crucial to recognize the limited nature of the sample under study, currently limited to students of the University of Salerno. A further aspect to take into consideration is the voluntary nature of the responses and the possible associated bias, since the use of online surveys could mainly attract students already predisposed or sensitive to the topic of sustainability, with the possibility of introducing a potential distortion in the results.

Managerial implications. The managerial context linked to research entails various challenges and opportunities, requiring an integrated and strategic approach. First of all, it's essential to highlight the importance of integrating sustainability into academic training: universities, as centres of knowledge, must take a leading role in the training of aware and sustainability-oriented professionals, implying not only the inclusion of environmental, economic and social aspects in academic programs, but also the active promotion of courses dedicated to these issues. In parallel, encouraging student engagement emerges as a key element. Encouraging the active participation of students in programs and seminars on sustainability is essential, but even more significant is involving them in practical projects, project work, internships, seminars, the creation of clubs or student associations dedicated to sustainability can promote collaboration and offer students a fertile ground for transforming theoretical knowledge into concrete actions in order to align the behaviours of human beings with the sustainability objectives of the 2030 Agenda. To date, sustainable skills must be at the centre of educational programs, preparing students to face challenges current and future and contribute positively to society.

The adoption of sustainable policies and sustainable practices at the institutional level, engaging faculty, staff and students in a common commitment, is essential to transform universities into effective catalysts for sustainable development.

Originality of the paper. The originality of this research lies in the multidimensional approach adopted to examine environmental sustainability, which also embraces economic and social dimensions. Thanks to an in-depth analysis, we aim to obtain a more detailed and nuanced understanding of sustainability. A distinctive element is represented by the investigation into the gap between the values declared by students regarding sustainability and the actions actually carried out. This approach aims to evaluate the actual transformation of declared intentions into concrete behaviours, thus offering a realistic perspective on the actual individual commitment towards sustainability.

A further point of value, in particular for future research, consists in the prospect of conducting the investigation not only in Italy, but also in other European countries, adopting a cross-cultural perspective in order to highlight cultural variations in knowledge, in values and behaviours related to sustainability. This analysis could identify any cultural

variations in perceptions and behaviours related to sustainability and, therefore, provide valuable insights for effectively adapting educational strategies in diversified contexts.

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Understanding the link among cultural participation, resilience, and well-being. A systematic literature review.

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Abstract

The scientific community is increasingly aware of cultural participation's role in enhancing the well-being of individuals and communities. Our paper aims to provide a more comprehensive understanding of this role through a systematic literature review that follows the PRISMA approach and sets future research and policy development directions.

Keywords: *cultural participation; cultural engagement; well-being; subjective well-being; resilience*

Aim of the paper. *The prosperity of a community can be characterised as a collective advantage for all its members, indicating the attainment of sufficient economic progress and the consequent favourable perception of individuals regarding their rightful position within society, exemplified by their quality of life (Ivković et al., 2014). The concept of well-being (Ryff et al., 2021) is considered a multifaceted (D'Agostino et al., 2019) and multidisciplinary concept which embraces several disciplines, from philosophy to psychology, economics, healthcare, and education (Burr and Floridi, 2020; Das et al., 2020). It is a complex concept which involves "cognitive and emotional evaluations, driven by objective as well as subjective factors" (Addis and Rurale, 2024, pag. 3). Indeed, the existing body of literature identifies two dimensions of well-being: objective well-being (OECD, 2013) which can be seen as an outcome and a reflection of tangible living conditions, and subjective well-being (Diener, 1984;2018; Kapteyn et al., 2015) generally identified as the perception of individuals on their living conditions (Alatartseva and Barysheva, 2015). Moreover, the psychology literature distinguished between two main approaches to well-being: hedonic and eudaimonic (Ryff et al., 2021; Waterman 1993). The hedonic approach is connected to pleasant and unpleasant experiences in life, and its components are represented by life satisfaction and positive and negative effects. On the other hand, the eudaimonic approach (Ryff & Singer, 2008) includes different dimensions such as self-acceptance, positive relations with others, environmental mastery, autonomy, and personal growth which are related to the "different challenges that individuals encounter as they strive to function positively" (Ryff et al., 2021, pag. 97).*

Today, scholars have increased their interest in the role of art and cultural participation in individuals' well-being as they can be crucial for enhancing it (Fancourt and Finn, 2019; An et al., 2022). Cultural participation can be identified as a comprehensive term which has constantly broadened its scope to incorporate an evolving range of activities, driven by shifts in social and cultural dynamics (Murray, 2006). It can be seen as the act of engaging in various cultural activities (Stevenson et al., 2017) and experiences and it acknowledges the audience as an engaged conversational partner, to be consulted or included in the process of planning and crafting the cultural offerings (OECD, 2022). It can be expressed with active or passive involvement (Passaretti et al., 2023). Through active involvement, individuals directly contribute to creating the cultural experience itself, while the passive form concerns the enjoyment of experiences and content crafted by others (Grossi et al., 2011). However, the lack of a wider and more comprehensive definition obstacles the policymakers in promoting new active forms of cultural participation that can have a significant social and economic impact (Sacco et al. 2018). Several studies underline the positive impact of cultural participation on individuals' overall well-being and subjective well-being in particular (Reyes-Martínez et al., 2021;2023; Blessi et al., 2016). Indeed, although culture might not explicitly dictate life expectancy or physical well-being, its influence on individuals' well-being is significant. It can enhance resilience (Wagnild, 2009) and contribute to developing lively and thriving communities (Grossi et al., 2011). Engaging in cultural activities encompasses the diverse methods and expressions through which individuals can avail themselves of cultural artefacts and encounters (OECD, 2022).

Through a systematic examination of existing literature, our paper strives to offer a more thorough comprehension of cultural participation's impact (especially about active involvement) on individuals' well-being by answering the following research question: What is the role of cultural participation in individuals' well-being?

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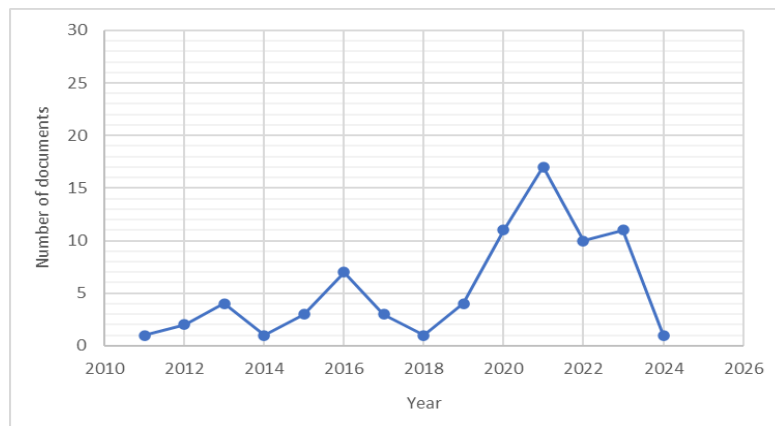
Methodology. According to Moher et al. (2015;2009), we developed a systematic literature analysis by adopting the PRISMA approach, which follows four main steps: identification, screening, eligibility, and inclusion. Such an approach proves beneficial for examining, summarising, and conceptualising pivotal themes and emerging topics, encompassing their implications for future research. First, we developed the research by adopting the Scopus search engine, from which we collected the articles. Two sets of keywords related to “cultural experiences” and “well-being” were selected and combined to conduct the research. The first set of keywords included terms such as “cultural experiences”, “cultural consumption”, “cultural engagement”, and “cultural participation” as they were related to the aspect of cultural experiences consumption. The second set of keywords was based on individuals’ well-being under cultural consumption, and it included terms such as “well-being”, “eudaimonia”, “hedonic”, and “quality of life”, Refining and combining the keywords in the two blocks allowed us to identify 281 studies.

In the second step, according to the screening criteria, we collected articles written in English that had already been published. We considered articles published in social science, business management, and psychology between 2010 and 2024 (Figure 1). The choice of including articles in the psychology field of research is related to the multi-disciplinarity of the research on well-being. Accordingly, we identified and selected 113 documents.

The third step included analysing the abstracts to ensure that only those strictly related to the topic of cultural consumption and well-being were considered. Therefore, 29 articles were excluded as irrelevant, and 84 articles remained for the literature review. Then, each author independently analysed the sample of 84 articles to ensure their eligibility according to the study’s goals. Through the full-text analysis, 8 papers were excluded as irrelevant.

In the fourth and final step, we validate each article according to the study’s goals, identify the leading research categories and trends and formulate recommendations for future studies (Bretas & Alon, 2021).

Figure 1 - Time span of articles distribution



Source: author’s elaboration on Scopus data

Findings. In this section, the authors present the descriptive analysis of the selected papers. A dedicated analysis of the 76 full articles identified was developed to ensure that only the articles related to well-being and cultural participation were included. All of them were pertinent to be examined to synthesise the results identified, presenting the interpretations associated with the paper’s subject matter. More in detail, as clearly visible in Figure 1, the majority of the scrutinised articles were published between 2020 and 2023, underlining a pick in publications in 2021, signifying an increasing interest in the topic of well-being in connection with cultural participation and experiences.

Following the Scopus database classifications, the articles were reconducted to subject areas, as shown in Table 1. The most populated categories are related to studies in social science and psychology. However, due to the multidisciplinary nature of the topic under study, several articles were conducted under the category “others,” which outlines the fragmentation of the literature and the different perspectives adopted in studying the phenomenon.

Table 1 - Distribution of the paper across areas

Type of Journal	Number of articles	%
Social science	23	30,26%
Psychology	20	26,32%
Arts and Humanities	7	9,21%
Sustainability	6	7,89%
Business, management	5	6,58%
Economics	4	5,26%
Urban Studies	3	3,95%
Others	8	10,53%
Total	76	100,00%

Source: Authors’ elaboration

The articles analysed were categorised based on their typology (theoretical or empirical) and according to the methodological approach adopted, as indicated in Table 2. Most of the articles identified conducted quantitative empirical analyses, followed by qualitative empirical and mixed-methods articles. The lack of literature review studies on the topic makes our contribution coherent and useful.

Table 2 - Distribution of the paper across research methodologies

Type of paper	Method	Number of articles	%
Theoretical	Literature review	2	2,63%
	Conceptual paper	1	1,32%
Empirical	Quantitative	44	57,89%
	Qualitative	18	23,68%
	Mixed Method	11	14,47%
TOTAL		76	100,00%

Source: Authors' elaboration

Thematic analysis. The first general evidence from the thematic analysis conducted on the selected articles confirms that participation and consumption of cultural activities and cultural engagement contribute to human/individuals' well-being in different forms, as underlined in past studies. Indeed, participation in cultural activities and frequenting cultural sites (e.g., museums, galleries, theatres, sports events, etc.) represent important elements for enhancing well-being in terms of mental illness, self-realisation and life satisfaction not only in young generations but also in older adults (Crociana et al., 2014; Tymoszyk et al., 2019).

The second important piece of evidence concerns the role of cultural participation and access to art during the pandemic. Indeed, a group of studies highlight how online engagement that was possible due to the adoption of technologies by cultural institutes and the promotion of online activities, events, etc., contributed to the enhancement of the well-being of individuals and continued producing benefits also during the period of transition back to in-person engagement (Mak et al., 2021; Anisimovich et al., 2022). Indeed, adopting technologies to bring cultural contribution to the virtual environment stimulated curiosity and transformed the interaction between arts and cultural institutes and their public underlining. Online cultural engagement in several forms has represented a fundamental tool to contrast the state of anxiety and loneliness and enhance individuals' well-being during the pandemic lowering the fear related to its negative impact (Trupp et al., 2022; Gotthardt et al., 2023). Virtual access to culture and arts stimulated people to engage online and benefit from the positive impact on their mental health and well-being deriving from that experience. The positive effects also lasted after the pandemic, especially for individuals with limited access to onsite events or activities. Indeed, virtual access favoured connectivity with other communities by enriching the in-persons' experience and encouraging a deeper connection in local culture (Caiola et al., 2023) but also demonstrating the crucial role of cultural activities and participation in arts for processing trauma (Anisimovich et al., 2022). These studies underline that if online engagement is well supported by interesting and meaningful content, it "inspires cognitive-emotional states in the viewer" (Trupp et al., 2022). In particular, the strongest predictors of engagement in arts during the pandemic are identified in age, education attainment, social support and emotion-focused or supportive coping styles and show evidence of the fact that engaging in arts activities represented for most individuals a strategy to cope with the negative emotions indicted by the pandemic and to improve self-development and resilience increasing their well-being (Mak et al., 2021; Chapple et al., 2023).

The third important piece of evidence emerging from the analysis of the literature concerns the fact that having access to arts and culture contributes to building social cohesion, identity, a sense of belonging and increasing well-being (Piscitelli, 2020). Accordingly, the importance of developing adequate policies to support subjective well-being by leveraging the promotion of cultural activities is highlighted. Indeed, facilitating access to arts and supporting engagement in art and culture might enhance the subjective well-being of individuals and communities (Anisimovich et al., 2022). Moreover, culture-based public health programs and policies and the adoption of innovative strategies in designing welfare policies are described as potential fundamental tools for enhancing well-being (Crociana et al., 2014; Grossi et al., 2019). Policy development should promote engagement in arts and culture consumption at different stages of individual lives. Indeed, when engagement in art and cultural consumption begins very early in life, it is more likely to continue (Espinosa et al., 2021). However, participating in such activities correlates with increased levels of education, improved socioeconomic status, and a reduced incidence of health issues (Tymoszyk et al., 2019). Therefore, investments in cultural education and effective policies to reduce inequalities in accessing cultural activities and art consumption might foster engagement and positively impact individuals' well-being.

Research Limits. The limitations of our paper mainly relate to the criteria adopted in the selection step. Indeed, by circumscribing to specific study areas, focusing only on articles written in English, and excluding sources of evidence such as conference papers, book chapters, etc., we might not have considered other potentially relevant sources of evidence. In addition, at this stage, this paper shows some of the evidence from the analysis of the articles since the process of analysis is still under development. Moreover, this explorative study considers cultural activities in general.

We need to analyse and focus on different cultural activities and how they differently impact subjective well-being and other important outcomes.

Theoretical and practical Implications. Our paper contributes to the analysis of the link between cultural participation, resilience, and well-being. The multidisciplinary nature of the studies on well-being shed light on the necessity of better understanding the contribution derived from various fields of research and the importance of cultural participation. Therefore, the summarisation of the current literature concerning the role played by culture in increasing individuals' well-being can represent a point of departure for scholars to identify future research insights and advance new contributions. Moreover, by clarifying the role of participation in cultural activities and art in increasing individuals' well-being, it might be possible to suggest guidelines for policymakers and organisations involved in the sector. From a practical point of view, we suggest that participation in cultural events should be fuelled both online and in-person, according to the specific needs of the target markets. Given the potential positive benefits of cultural participation both for new generations as well as older people, it is important to enable virtual and traditional opportunities for target users to benefit from culture and art.

Originality/value. Few literature reviews have been conducted on the relationship between well-being, resilience and cultural participation. This Systematic Literature Review offers a broad view of those studies focusing on the impact of cultural participation on individual well-being. By considering the multidisciplinary nature of well-being, we adopted a holistic approach that considers studies in several disciplines, such as management, psychology, and social sciences. This approach allows us to have a cross-disciplinary overview of the phenomenon, collecting different elements that can be insightful to set up guidelines for policymakers and companies that work in the cultural sector aiming at improving their social impact on society and increasing individuals' and communities' well-being and resilience.

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Shaping tomorrow's sustainable enterprises: profiling the hard and soft skills of sustainable managers

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Abstract

Despite the growing importance of sustainability in the enterprise, a knowledge gap exists regarding the specific roles and skills of professionals managing it. This research explores the key characteristics and differences between three sustainability professions: CSR Manager, Sustainability Manager, and ESG Manager. Employing a qualitative approach, the study conducts a content analysis of job advertisements for each position (n=146) posted on LinkedIn and similar platforms between June and September 2023. The analysis aims to identify the main hard and soft skills companies demand when seeking these sustainability professionals. This research sheds light on the evolving landscape of corporate sustainability management, offering valuable insights for companies seeking qualified personnel and individuals aspiring to enter these fields. It is also a study that opens critical reflections on what may be new professional figures that will emerge to manage the challenges of the near future such as the stakeholder manager and the ecosystem manager.

Keywords: ESG manager; CSR manager; Sustainability manager; Ecosystem Manager, Stakeholder Manager; Human resource,

Framing of the research. Several scholars, including Rasoulinezhad (2020), Zakari et al. (2022) and Sun et al. (2023), agree that the future well-being of humanity depends on the adoption of sustainable development practices. They argue that any alternative to sustainable development undermines economic stability and exacerbates the depletion of natural resources, increasing the threats of global warming and climate change. For this reason, companies are showing an increasing interest and focus on environmental and social issues, especially concerning ethical and responsible corporate behaviour (Baumgartner & Winter, 2014). Corporate Social Responsibility (CSR) is a governance tool that facilitates a possible 'match' between organizations and their stakeholders. CSR represents a strategic approach aimed at two goals: taking charge of the harmful effects and being aware of the social dimension of the organization, contributing to answering community needs. The business models are increasingly configured as "stakeholder-based," demonstrating that businesses dealing with competitive, environmental, and social challenges must create and manage bidirectional relationships with heterogeneous actors. This trend offers a framework and guidelines to ensure that the company acts responsibly towards and with its internal shareholders, employees, and other stakeholders, such as the local community, suppliers, customers and the environment (Del Baldo, 2010; Sciarelli, 2002). CSR aims to create value for communities and companies, improving social legitimation and reputation, investor trust and employee satisfaction (Van de Ven, 2008; Skudiene and Auruskeviciene, 2012). The evolution of the concept of sustainability and the adoption of more responsible business practices have led to new conceptualisations such as the ESG pillars - Environmental, Social, and Governance, in which, unlike CSR, it considers financial and non-financial performances as the company's objectives (Galbreath, 2013; Gillan et al., 2021). The pillars of ESG are also born with the hope of measuring companies' environmental, social, and governance performance through standardized and shared metrics; despite that, the road is still long, so the impact of taking ESG criteria could create real value. This was an obstacle since the results could not be measured or compared, as they were subjective. The concept of ESG has a vast literature but still with considerable research potential (De Falco et al. 2024). Faced with thus having to cope with new and sought-after sustainable needs, companies have discovered themselves bereft of professional figures capable of meeting them. New professional figures

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have naturally responded to these new needs, duties and rights (Camargo et al., 2023). Thus, in addition to the CSR, we have the ESG Manager, who is in charge of guiding and implementing environmentally, socially and governance-oriented corporate strategies (Munoz et al., 2014; Van Duuren et al., 2016) and the Sustainability Manager (SM) (Borglund et al., 2023), who represents the highest-ranking position within the organisation dedicated to overseeing sustainability initiatives. Its emergence reflects the increasing significance of corporate social responsibility (CSR) and sustainability within the business landscape (Wright et al., 2012; Borglund et al., 2023). Such professions require specific skills; they are crucial in ensuring effective business operations management and creating long-term value. In this context, we speak of soft and hard skills. Soft skills refer to skills or behavioural personality characteristics manifested in everyday life (Mohd et al., 2024). They can be described as knowledge inherent in the human mind and very personal, involved in experiences, actions and ideals (Chen et al., 2018). These skills are fundamental to preparing for work and include communication skills, thinking skills, creativity, leadership, problem-solving, management, continuous learning and teamwork skills (Mohd et al., 2024; Cimatti, 2016). On the other hand, hard skills are associated with the ability to use specialised tools, procedures and techniques (Ahmad et al., 2020; Cimatti et al., 2016). These competencies are required to apply specific knowledge and skills in a real work context.

Purpose of the paper. There has been no shortage of changes concerning job positions, which have increasingly evolved to the development of new figures at the managerial level: the sustainability manager, the CSR manager, and the ESG manager, each with their responsibilities, tasks, and skills. Despite the importance of these figures in the corporate landscape, there still needs to be more knowledge regarding the qualifications, job responsibilities and hard and soft skills of professionals in charge of strategic corporate sustainability management (Macdonald et al., 2020). This paper aims to answer the research question: "What are the main characteristics and differences between the new professions called upon to manage sustainability: CSR manager, Sustainability Manager, and ESG manager?"

Methodology. In answering this research question, a qualitative approach was adopted by conducting a content analysis to map the skills of the three professional figures listed: the CSR manager, the sustainability manager, and the ESG manager. To analyse and deepen the phenomenon, research was carried out on specific job offers for each of the 3 relevant figures: Sustainability manager (n =50), ESG manager (n=47), and CSR manager (n=49), to identify the main skills required by companies. Offers published on LinkedIn or other professional search channels from June to September 2023 were investigated.

Results. An initial review shows that these figures must possess many competencies, including leadership, problem-solving skills, transparency, and teamwork, to successfully address sustainability challenges (Borglund et al., 2023). Now, we present the characteristics specific to each analyzed figure.

The "CSR manager" is responsible for developing CSR-oriented corporate strategies that align with the company's values. His or her role is to ensure that a company operates in a socially responsible manner, contributing to and positively impacting the environment. From our analysis, the CSR manager is not only required to have a degree in STEM subjects, but companies also expect him/her to be a doctor in communication to support the disclosure activities. The role of the CSR manager generally covers these responsibilities: 1. strategy development; 2. stakeholder and community engagement; 3. reporting; 4. communication; 5. business integration. The online research work for the CSR manager, on the base of 49 announcements (4 companies of human resources; 6 employment agencies; 8 agencies specialising in fashion and clothing; 6 agencies operating in the energy and environment sector; 4 companies operating in the large-scale distribution and organized production of goods and products; 21 other sectors). The Main Hard skills aspected are knowledge of the English language (n=36); a university degree (n=30); knowledge of the Office package (n=15); knowledge of relevant regulations and new taxonomies on environment issues but not confined them knowledge of GRI standards (n=13), finally know how to develop reports and CSR principles (n= 6). Soft skills, in order of importance, are communication and interpersonal skills (n=24); problem-solving skills (n=18); teamwork skills (n=15); flexibility and proactivity (n=10); curiosity, interest and passion for the subject (n=8); possession of analytical skills (n=9); time management (n=3).

The "sustainability manager" is a new figure that has emerged recently. When creating a 'sustainable' corporate strategy it became a managerial task and was no longer carried out at arm's length. Initially, this figure only dealt with sustainable reporting and the sustainability report; today, these are only some tasks he or she performs. At first, therefore, it was internal figures within companies who showed a strong interest in the topic of sustainability. During the period in analysis, 50 announcements were posted for the position (9 consulting and business services companies; 4 consulting and it services companies; 7 human resources services companies; 2 financial services companies; 11 personnel services and recruitment companies; 18 miscellaneous services companies, such as professional services, real estate, freight transport). Today, following a path of increasing development, the Sustainability manager has reached a managerial role, with specific skills and tasks to deal with all environmental, social and economic issues to build the company's business strategy. Thus, his role in the company has a twofold objective: developing various reports, mainly related to sustainability reports, and defining the business strategy from a sustainable perspective. These two objectives are increasingly complex as the company itself grows. The Main Hard skills required are knowledge of the English language (n=36), degrees in STEM subjects (n=43), knowledge of ISO standards (n=22), knowledge of the Office package (n=15), reporting skills (n=8); to a lesser extent, the following are required experience in sustainability reporting (n=8), experience with Autocad (n=5), possession of other sustainable certifications (n=3). The main soft skills to take into account are teamwork (n=25), problem-solving (n=18), communication (n=21), passion and leadership qualities (n=7), critical and analytical thinking (n=3), and goal-oriented (n=3). The sustainability manager is a specialist who carries out the task of transforming the company into a sustainable reality, managing the company's environmental, economic,

and social impact, and ensuring that the business is sustainable in every respect. She/He aims to optimize the company's processes in compliance with laws and regulations and to research new sustainable initiatives. He achieves this by meeting three thematic requirements: understanding the evolution of ESG standards and their impact on market dynamics, driving the evolution of environmental systems towards sustainability, and promoting a CSR corporate culture.

The 'ESG manager', defined by the Randstad platform, is a professional who develops strategies that impact the environment, society and corporate governance while remaining aligned with corporate values. This figure was born following the emergence and development of ESG standards in 2006. Among the many tasks he or she may be involved in, the main ones are ESG assessment and reporting, ESG integration in corporate strategies, and external ESG communication: risk and opportunity assessment. 47 announcements were reviewed (4 companies are operating in the business services sector; 11 are recruiting professionals; 4 are IT consultancy; 4 are operating in the credit and finance sector; 24 out of 50 companies are from various sectors). From this review, the Hard skills most required are English language (n=35), knowing how to analyse KPIs (n=15), knowing how to use Office Package (n=12), knowing sustainability regulations and stay up-to-date on them (n=11), know how to develop a sustainability budget and reports (n=10), know GRI standards and how to apply them (n=10), as a basis, as for the other positions, possess a master's or specialist degree with a strong interest in STEM subjects (32). Compared to other advertisements, the Soft skills required for this figure still need to be clarified. In fact, in many advertisements, they were often not made explicit. The analysis identified the following as the main ones for soft skills: teamwork (n=22), interpersonal and communication skills (n=21), problem-solving skills (n=18), being able to work autonomously (n=9), being proactive (n=8), being able to organise oneself and be a leader (n=7), having a passion for sustainability (n=6), feeling motivated (n=6).

A comparison of the three figures shows that in terms of hard skills are more specific and different, although common factors are now knowledge of English and the Office package and the most relevant ISO standards. As it emerges, the CSR manager is more oriented towards reputation and public relations management. In contrast, the Sustainability manager focuses more on reporting and certification and the knowledge of software such as Autocad. What is also interesting is how, in many cases, the differences in the skills required for these managers are determined by the sector and the size of the company that has to report or comply with specific sustainability obligations. In terms of demand for soft skills, the most in-demand are interpersonal and communication skills, the ability to work in a team and problem-solving skills.

The growing demand for these skills, coupled with the great development of platforms and networks by companies to have a sustainable view and management of the entire value chain and as posit in Argyres et al. (2019) on their theory of partnership, is possible to be prodromal to the emergence of a new professional figure that is already appearing on job platform ads such as LinkedIn.

Reference is made in particular to two new figures. The first is the "Stakeholder manager" will need to demonstrate the ability to manage broad stakeholder networks for the development of projects with primarily environmental and social impacts, be able to identify key stakeholders and be proactive in conflict resolution and the promotion of positive stakeholder involvement in the organisation or project. In addition to great critical skills, interpersonal mediation skills and resilience, it will be important to mature a "Stakeholders skill".

The second is the "Ecosystem manager" on the other hand, will be responsible for orchestrating, managing and being a voice within large innovative and non-innovative ecosystems, such a figure will not only be concerned with sustainability, but with ensuring both the growth, resilience of the ecosystem and the assessment of its impact at different levels and the safeguarding and support in the realisation of common goals among the different ecosystem actors.

Research limitations. This study suffers from particular limitations, hopefully paving the way for future research. The sample of advertisements selected is purely Italian. In the future, it will be interesting to extend the analysis to European countries or countries where interest in and legislation towards sustainability is different, e.g., emerging or more attentive and developed countries. It will then be essential to extend the research by conducting qualitative surveys to understand whether the real demand for skills is confirmed in professional practice in the tasks and activities these managers must perform. In addition, future research will have to capture any misalignment between the different figures and the skills trained by universities and other training centres. It will also be interesting to monitor how, over time and across business sectors, the three figures will change; for example, there is an increasing tendency to separate the different pillars of sustainability in administrative management, and environmental management is assigned to specific figures, more of an engineering nature, while the new diversity managers increasingly carry out social management.

Managerial implications. This extended abstract has several implications for management. The roles analysed require various skills, including leadership, problem-solving, transparency and teamwork skills. Companies should invest in ongoing training to develop these skills in their CSR, sustainability, and ESG managers. As interpersonal skills, teamwork, problem-solving, and capabilities to create and manage relations (engagement) with heterogeneous agents emerge as the most in-demand soft skills, companies should emphasise selecting and developing managers with these skills. This emphasises the importance of a more holistic approach in assessing soft skills, with particular attention to elements such as emotional management and interpersonal skills, which can substantially influence work dynamics and leadership in sustainability-oriented contexts. Coaching and mentorship programs can help improve these skills. Given the increasing complexities of the responsibilities assigned to these roles, flexibility and proactivity are essential. Work environments must foster a culture that promotes flexibility and encourages staff to stay up to date on new trends and

regulations. However, we must recognize the impact that new technologies will have in redesigning the skills and abilities required of these figures.

Additionally, all three should maintain a solid technical knowledge base, including understanding environmental regulations, managing KPIs, applying standards such as GRI, and having in-depth knowledge of ISO standards. This requires constant updating on regulatory and technological developments in the sector. On the other hand, companies will have to understand which figures are most suitable for their needs. In the future, more hybrid figures may arise to combine the different sustainability dimensions with the growing need for highly specialised figures.

As it turned out, it has been seen that to transform into agents of change in sustainable behaviors are relevant dimensions such as ethical sensitivity and pro-environment behavior (Azam 2023). The present study highlights that these dimensions of soft skills still need to be researched. In the future, therefore, one should consider whether dimensions such as commitment to sustainability and moral ethics are assessed in assessment by, for example, conducting qualitative research on human resources deputed to personnel selection as well as being ready to assess whether in filling these roles it determines a change in terms of sensitivity and decision making with repercussions on business strategies and in relations with top management.

The present paper also offers important reflections at the theoretical level; in particular scarce are the reflections on the skills and competencies that those deputed to manage sustainability in enterprises should have especially if as posit in Annosi et al. 2023 and Petriglieri and Petriglieri (2020) “managers are not born nor made but fabricated” it is relevant on how facilitate the build of more responsible and ethical manager able to manage the broader dimension of sustainability that will be mirror of the company commitment.

Originality of the paper. Faced with a growing commitment to sustainability, contemporary companies are called upon to manage and initiate new sustainable processes to comply with regulations and reporting that require specific skills. However, there has yet to be a clear survey of the hard and soft skills most required by companies. This study highlights the characteristics most in demand and the similarities and differences between the three leading figures called upon to oversee a company's sustainability. The study opens critical reflections on what may be new professional figures that will emerge to manage the challenges of the near future such as the stakeholder manager and the ecosystem manager

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**Track 6
Marketing**

Virtual influencers in tourism marketing: insight or oversight? The case of “Open to Meraviglia”

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Abstract

Virtual influencers (VI) are increasingly being applied to different industries, extending their reach into the tourism context as well. Despite their growing popularity and use, consumer reactions to VIs are ambivalent. In particular, the Italian Ministry of Tourism’s recent ‘Open to Wonder’ project, which employed Botticelli’s Venus to promote Italian tourism, elicited a wide range of criticisms among users. The aim of this study is to investigate the underlying motives in terms of salient source (influencer-related) and content (post-related) attributes that drive Instagram users’ negative feelings. We find that inexpressive versatility, low-quality images, impersonal and inadequate caption discourse, as well as perceived lack of professionalism, significantly reduce her potential to engage with the audience. We discuss these results within the context of source credibility theory, trying to unveil the motivation underlying negative feedback from users. Managerial implications are provided with recommendations on how tourism practitioners can harness VI marketing effectively to avoid criticism from the public.

Keywords: *virtual influencers; tourism; digital communication; social media campaigns; case study; source credibility theory*

Framing of the research. *Virtual influencers are AI influencers (i.e., those generated using AI technology) computer-generated characters (i.e., created by the computer-generated imagery technology), or digital influencers/personas/entities. By engaging in activities such as modeling, socializing, post content, sharing opinions, promote brands, VIs project a human-like persona (Arsenyan and Mirowska, 2021). Consequently, capitalizing on their advantages, businesses are partnering with these entities to endorse their products and services (Campbell and Farrell, 2020; Gutuleac et al., 2024).*

Past research found that VIs are achieving different outcomes from brands in terms of attracting new audience segments, increased awareness, favorable publicity, and increased consumer engagement (Franke et al., 2023; Thomas and Fowler, 2021). Specifically, integrating VIs into a brand’s marketing strategy can position the company as innovative and tech-savvy, leading to a positive impact on its brand reputation among users (Conti et al., 2022). Moreover, virtual influencers remain permanently under the auspices of the company, thus eliminating the likelihood of any negative and unethical surprises (Deng and Jiang, 2023). In particular, companies can use VIs to enhance the credibility and authority of their product endorsements, as VIs can exclusively be created or commissioned to mirror a brand’s image and values (Yan et al., 2022; Sands et al., 2022). Due to their adaptability, they do not depend on physical and time limitations. Specifically, they can be leveraged for promotional purposes in a wide range of contexts and moments, making them an attractive option for brands seeking versatility (Ferraro et al., 2024). Although there is no lack of significant concerns (Conti et al., 2022), such as authenticity, high costs, and unrealistic expectations, these issues are generally mitigated by users’ tendency to not hold virtual influencers directly responsible for negative outcomes. Instead, they direct their criticism towards the creators or companies behind their development (Liu and Lee, 2022).

Although they are widely and profitably being introduced in product advertisements, it remains to be proven whether they are also effective in tourism sponsorship. In fact, just lively scholarly research explores the potential use of VIs in the context of tourism marketing. In this vein, Xie-Carson et al. (2023) found that humanlike VIs are preferred over 3D animated VIs and the least preferred influencers are 2D animated VIs. Furthermore, Instagram posts from humanlike VIs that combine images of tourism settings with rational messages attract the most engagement from the audience. More generally, Block and Lovegrove (2021) focused on the post content, by conducting textual and sentiment analysis on Lil Miquela’s posts and listed intriguing identity, innovative storytelling, and emotional engagement as core communication

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strategies. In their semiotic analysis, De Brito Silva and colleagues (2022) concluded that the most important marketing strategies of VIs depend on the alignment of their posts with their lifestyle, personality, and the narrative of their personal lives. From a consumer perspective, previous studies suggest that individuals interact with VIs as they interact with human influencers (Lou et al., 2023; Sands et al., 2022). However, some research suggests that credibility is still a significant barrier for companies using VIs (Arsenyan and Mirowska, 2021; Franke et al., 2023). In this vein, influencers' success in influencing the user's behavior depends on credibility. In the social media context, source credibility refers to the extent to which content creators are believed to be credible, knowledgeable, and trustworthy by their audiences (Zha et al., 2018). The four-dimensional definition of source credibility is composed of expertise, trustworthiness, attractiveness and similarity. Expertise signifies that the source possesses adequate knowledge and skills in a specific domain, while trustworthiness reflects the source's honesty, and integrity as perceived by the user (Colliander and Marder, 2018). Attractiveness is frequently related to the physical appreciation of the source, while similarity involves the common traits that audiences share with media figures (Yuan and Lou, 2020; Schiappa et al., 2007). For instance, Lou and colleagues (2023) found that most followers perceive virtual influencers as uncanny and authentically fake. Despite their effectiveness in enhancing brand awareness, VIs often fail to inspire purchase intentions due to their lack of authenticity, low similarity to followers, and their weak parasocial relations with followers. Choudhry et al. (2022) explain that followers' attraction to virtual influencers arises from a persuasive combination of visual appeal, mystique and innovative storytelling. However, there is a perceived reluctance to attribute trustworthiness to these virtual entities. Furthermore, Yang et al. (2022) demonstrate that virtual influencers characterized by a higher degree of perceived humanness are associated with enhanced levels of trustworthiness, expertise, and attractiveness. Here, source credibility theory is addressed to explain how the sub-dimensions (attractiveness, expertise, trustworthiness and similarity) might explain negative feedback from users.

Given that the tourism sector is increasingly influenced by influencer marketing trends, there is a significant opportunity to leverage VIs engagement to market tourism experiences. However, research into how users interact with and respond to VI marketing in the tourism industry is still lacking.

Purpose of the paper. The aim of this research is to analyze the underlying motives in terms of salient source (influencer-related) and content (post-related) attributes that drive Instagram users' negative feelings towards *VenerItalia23*, a digitally designed influencer created with the intention of promoting the international attractiveness of Italian tourism. Specifically, we intend to investigate the causal factors that contribute to the prevailing negative feedback within the campaign's reception. By conducting a qualitative assessment of the interactions and sentiments expressed by the audience, we try to unravel the underlying mechanisms that have negatively influenced public perception. The final purpose is to provide a more in-depth understanding of the complexity and potential drawbacks associated with the application of VIs in the tourism marketing context. Drawing on our findings, the study shall offer valuable recommendations for enhancing and optimizing future marketing strategies within the tourism context.

Methodology. Given the limited attention the previous literature has placed on the role of Vis in promoting tourism initiatives, this paper adopts an exploratory case study approach (Eisenhardt, 1989). The case under investigation is *Open to Meraviglia*, an Italian tourism promotion campaign launched by the Italian Ministry of Tourism and the Italian National Tourist Board (ENIT) in 2023. This case study is relevant for the aim of our research due specific reasons. First, 'Open to Meraviglia' leverage a virtual influencer in the context of tourism marketing - an area still unexplored; second, the campaign leverages Italy's historical heritage through a well-known figure (i.e., *Venere*) compared to VIs; third, has elicited significant negative sentiment among its audience. To answer our research questions, we employ a netnographic approach, enriching our qualitative analysis by engaging deeply in the digital interactions around *VenerItalia23* on Instagram. Netnography "as a marketing research technique, netnography uses the information that is publicly available in online forums to identify and understand the needs and decision influences of relevant online consumer groups" (Kozinets, 2002, p. 61). We chose a netnographic approach primarily due to its unobtrusive nature, allowing us to observe consumer behavior as our unit of analysis, rather than the person, in an environment unaffected by market research intervention (Kozinets, 2002). This method provides a transparent window into consumers' organic interactions, revealing the essence of their information-seeking behavior and the natural flow of word-of-mouth communication within online communities. In line with the approach proposed by Kozinets (2002), we followed these steps: 1) *entrée*; 2) data collection and analysis; 3) trustworthy interpretation. We began our investigation by formulating specific research questions aimed at understanding the negative responses to the *VenerItalia23* campaign. Identifying Instagram as the most relevant online forum for our study, we dedicated ourselves to thoroughly understanding this platform, the dynamics of the specific groups involved, and the individual participants contributing to the discussions. Next, we moved to the data analysis phase, firstly, we documented data from the computer-mediated communications of online community members, including the posts, comments, and interactions related to the *VenerItalia23* campaign on Instagram. Secondly, we recorded our observations concerning the community dynamics, member interactions, and the overarching meanings and sentiments being expressed. In line with Glaser and Strauss (1967), we collected data as long as new insights related to our research question emerged. The coding of the posts covered both data analysis and data interpretation (Spiggle, 1994), where each category later became a theme (Arnould and Wallendorf, 1994).

Case study: Open to Meraviglia. 'Open to Meraviglia' is an innovative tourism promotion campaign launched by the Italian Ministry of Tourism and ENIT, with the support of the Department for Information and Publishing of the Presidency of the Council of Ministers. This campaign represents a novel approach to marketing Italy's rich cultural heritage and diverse tourist offerings to the world, with Sandro Botticelli's *Venus* serving as its exceptional ambassador. At the heart of this initiative is the transformation of Botticelli's *Venus* into a modern virtual influencer, a figure that

personifies Italy's deep historical roots and modern appeal. This new Venus travels across Italy, from its iconic art cities to its quaint villages, promoting the country's breath-taking landscapes, culinary delights and vibrant array of tourist attractions. Designed by the Armando Testa Group, it unfolds through a multi-faceted strategy that includes a promotional video and a geographically diverse billboard campaign spotlighting the beauty of southern, central and northern Italy. As Venus travels through the different regions and municipalities participating in this digital campaign, new destinations, suggestions and itineraries will be unveiled, thereby enriching the storyline and inviting a worldwide community to discover Italy. The initiative is funded by a considerable investment from ENIT, which aims to reach key international markets through targeted promotional activities on multiple channels, including airport hubs, European railway stations with direct connections to Italy and digital ecosystems.

Results. From our analysis, the following three points emerge. We include some supporting comments that have been anonymized for privacy reasons.

1. Image quality and repetitiveness

The critique centers primarily on the low quality and repetitiveness of the imagery used in the campaign. The feedback ranges from disappointment to irony regarding the execution.

User 1: Ah well, it's really tiring to poorly cut out images from stock photo sites and have the captions translated by Google Translate, poor little Venus.

User 2: Oh, still rolling with stock photos, huh? Fantastic job there.

User 3: Venus, why the same face all the time? Your feed is a bit repetitive.

User 4: Photo taken with a 2005 cell phone with a 2-megapixel camera?

User 5: People who'd take better pics just by snapping them randomly.

These comments collectively illustrate a perception of the campaign as lacking in authenticity, creativity, and quality-key elements for engaging and inspiring potential tourists through a virtual influencer.

2. The lack of care, attention, and professionalism in a campaign worth 9 million euros

The second critical observation revolves around the perceived lack of meticulousness, attention to detail, and professionalism in a campaign that commands a substantial budget of 9 million euros.

User 6: So adding a location tag was too hard? Guess the 9 million euros couldn't cover that too, huh?

User 7: Besides the awful pics, I thought this page was all about getting tourists to Italy. Why are we even mentioning a tourism fair in Germany?

User 8: Just 4 random pics without even saying where they're at

User 9: Immerse yourself in medieval history," but Sutri was founded by the Etruscans, though

User 10: Anyway, no matter what you think, our Venus has 260K followers. I won't judge the content (though I'm tempted), but as an influencer, well, let's just say she's not exactly at the top of the popularity charts

The discourse surrounding the challenges encountered in a 9 million euro tourism campaign illuminates significant gaps in strategic planning and execution. The omission of geolocation tags, engagement with unrelated content such as a tourism fair in Germany, and the utilization of nondescript imagery are notable deficiencies. Moreover, the inaccuracies regarding the historical foundation of Sutri highlight a concerning oversight in content accuracy. Despite the virtual influencer Venus commanding a sizeable digital following, these missteps underscore a pivotal issue: the quantitative metrics of social media influence are insufficient substitutes for quality and relevance in content.

3. The quality of posts' description

The quality of the translation is another aspect that emerged from the analysis.

User 11: Seriously, who's doing your English translations? I've got a degree in language mediation and have been living in London for 13 years. If you need, I can help you out? For free, just for the love of our country.

User 12: Oh, it's really a hassle to badly crop out images from stock websites and have Google Translate do the captions, poor little Venus.

User 13: Your English has gotten better, finally you guys used ChatGPT like I suggested a while back.

User 14: Translating into English is tough, too.

User 15: A smooth translation, I would say...

The comments on the *VenerItalia* profile are full of irony, reflecting a critical yet humorous approach to the translation quality of the posts. From offers to help 'for the love of our country' to teasing remarks about relying on Google Translate and suggestions that improvements could be made by using ChatGPT, each comment is layered with irony.

Preliminary discussion and conclusion. These preliminary results represent a starting point as the research is still in progress. Yuan and Lou (2020) indicate that elements of source credibility significantly influence the parasocial relationships that develop between social media influencers and their followers. Our findings are linked to the four-dimensional definition of source credibility: attractiveness, similarity, expertise, and trustworthiness (Ohanian, 1990; Xie-Carson et al., 2023). Specifically, criticism has been directed at the repetitiveness and low quality of the images employed, noting that *VenerItalia23*, as a virtual influencer, lacks versatility in her expressions, rendering her presence static and unnatural. Our findings contradict prior research, which found faces of influencers in Instagram photos to

enhance engagement (Bakhshi et al., 2014; Jaakonmäki et al., 2017). Conversely, Xie-Carson and colleagues (2023) report that in the tourism context users prefer tourism images without the presence of the influencer.

Despite expectations that *VenererItalia23* might inspire followers to engage in similar experiences, mainly negative feedbacks are reported. Schiappa et al. (2007) explain that similarity involves the common traits that audiences share with media figures. The monotonous portrayal of *VenererItalia23*, particularly due to the repetitive expression in each post, might impede the audience's ability to connect with *VenererItalia23* as a genuine, authentic and persuasive character reflecting common values and interests. This observation detracts from the virtual influencers' attractiveness, a key driver of followers' mimetic behavior (Kim and Park, 2023). In terms of caption discourse, users even mock the caption, finding it to be quite impersonal.

Moreover, observations on the perceived lack of care and professionalism in this high-budget campaign reflect negatively on the perceived expertise behind *VenererItalia23*. In contrast to Liu and Lee's (2022) findings that users tend to absolve virtual influencers of responsibility for negative outcomes and instead direct their criticism at the creators or companies, in this case, our analysis suggests that users direct their criticism both at the VI itself and at the ENIT campaign. Furthermore, the feedback on the perceived negligence in campaign execution directly challenges her expertise. Expertise refers to the level of knowledge or skill in a specific field (Bargoni et al., 2024). In this case, the audience's perception is that the campaign lacks a deep understanding of effective tourism promotion. Specifically, they highlight that the campaign lacks thoroughness and attention to detail - high use of translation programs, little knowledge about historical backgrounds, and inappropriate content for promoting tourism. For instance, the presence of inaccuracies in posts that should be promoting Italian beauty, or the fact that the campaign aims to promote Italian tourism to an international audience, but then uses language that is not appropriate. The lack of expertise is closely linked to the perceived trustworthiness of the audience. Trustworthiness (Wiedmann and von Mettenheim, 2020) pertains to the honesty, genuineness, and truthfulness of the source. Issues such as the use of inadequate translations, lack of geographical tagging, and inaccuracies in historical information not only reflect a disregard for detail but also reduce the perceived trustworthiness of the information in the post.

Our findings highlight the importance of considering three main attributes that users may influence consumers' reactions to any post: source, image composition, and caption discourse.

Conclusion and research limitations. We provide some insights for embedding VIs in tourism promotion. Specifically, our investigation examines the Italian 'Open to Meraviglia' campaign, with the aim to unveil the motivation underlying negative user comments. Although the potential of VIs to open new marketing opportunities with their flexibility and control, this case study reports a high number of critiques.

Grounded on the source credibility model (Ohanian, 1990), we found that *VenererItalia23* as a VIs ambassador in charge of promoting Italian tourism abroad, is failing to engage the public positively. The criticisms leveled at *VenererItalia23* - from the repetitive and poor quality of the pictures to the impersonal nature of the captions - highlight a failure to harness the distinctive capabilities of VIs and to create a genuine, intimate connection with the audience. Specifically, we report that her lack of expressive versatility, low-quality image, and impersonal caption discourse reduce her attractiveness, similarity, expertise and trustworthiness. In particular, the low level of attention to detail and professionalism in terms of accuracy of content and use of language suggests a significant underestimation of the audience's expectations of authenticity and expertise in storytelling. At first glance, users prefer authentic and engaging storytelling, high-quality images and potentially without the intermediary of a virtual influencer. Virtual influencers, like *VenererItalia23*, should be considered not only as marketing tools but as storytellers who embody the essence of the destination they represent. Moreover, our findings do not exclusively ascribe the negative feedback to the digital nature of *VenererItalia23* as a virtual influencer, potentially distinguished from a genuine, real influencer. They instead highlight the initiative to resurrect the essence of Botticelli's *Venus*, thereby indicating that the primary intent is not to persuade the audience of its authenticity as a real-life influencer embodying human-like physicality and behaviors. Despite this, our analysis suggests that introducing variability in expressions to foster an element of surprise for the audience could be more advantageous. Such an approach may mitigate the audience's habituation to an unchanging expression.

The limitations of this study lie primarily in its exploratory nature and methodological approach. Furthermore, the analysis is limited to a singular campaign and its acceptance among Instagram users, which may not entirely reflect the multiple ways VIs influence tourism marketing in different cultural contexts, platforms and audiences. Also, sentiment and thematic analysis can be opened up to interpretation by the researcher, which introduces a degree of inherent subjectivity into the findings. A larger sample of Instagram accounts of VIs specifically designed to promote tourism and chosen as symbols, rather than any virtual influencer, should be used to replicate this research to validate and generalize the preliminary results.

Managerial implications. When interpreting these findings to offer some managerial implications, it is important to note that they are in a preliminary stage. Drawing on these preliminary findings, we argue that tourism managers should clearly communicate the role of the VI and the fictional nature to meet and manage users' expectations. Specifically, they should be transparent on the role of the VI, by explaining the creative choices behind the choice to leverage a historical figure and clarify that a VI serve as a storytelling tool rather than a "traditional" influencer. Furthermore, they should invest in high-quality imagery, ensuring different and expressive content, and avoiding repetitive faces of VI on the posts that can lead to user disengagement. For instance, a video of *Venus* tasting local Italian cuisine or participating in traditional events can make the content more engaging and relatable. Moreover, managers may encourage followers to share their own experiences with the campaign's featured destinations and tag the VI. Highlighting user-generated content on the VI's profile can increase her authenticity and create a supportive community. For example, followers could

be invited to share their photos of destinations that were previously posted by VenereItalia23, and she could then “react” or “comment” the posts. Furthermore, to avoid monotony in facial expressions, managers could leverage animation software to create smiles, winks, and other emotive gestures that humanize the VI, and enhance Vi’s expressive face. Importantly, the congruity between the facial expression and the emotional tone of the post should be considered. For instance, for a joyful landscape, a look of awe could be implemented. From a content perspective, agencies and managers leveraging VI as tourism brand ambassadors could collaborate with historians, artists, chefs, and other local experts to ensure authenticity and accuracy in the posts. We would therefore recommend posting narratives that capture the audience’s interest, using a mix of historical facts, cultural curiosities, and personal stories

Originality of the paper. This research, though at its preliminary stage, presents elements of originality in the investigated topic. The originality of this paper lies in its exploration of virtual influencers (VIs) within tourism marketing, particularly focusing on their influence and reception in promoting national tourism through social media campaigns. Specifically, this study leverages the ‘Open to Meraviglia’ campaign, initiated by the Italian Ministry of Tourism, which employed Botticelli’s Venus as a VI to enhance Italian tourism globally. This approach of utilizing a historically significant figure as a VI, specifically designed to promote the essence of a nation’s heritage, sets a novel precedent in the field. Furthermore, our analysis examines the underlying motives of mixed reactions from the audience, especially the negative ones in the tourism context - a still little investigated area. In addition, by highlighting the specific challenges of the use of a cultural icon as a VI in tourism marketing, our preliminary findings contribute to the academic discourse on digital marketing and influencer campaigns, aiming to provide insights that could be applicable beyond the Italian context to the global use of VIs in promoting tourism.

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Mitigating the Negative Effects of Human-like Virtual Medical Agents on Patients' Emotions. Results From a Preliminary Experimental Study

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Abstract

Virtual agents captured greater attention in various sectors, including healthcare, with potential applications such as chatbots and avatars of medical professionals, to assist final patients and boost their journey. However, understanding their impact on patients' reactions remains a still hazy, critical area of investigation. Drawing upon the Uncanny Valley Theory, through an experimental study, this paper examines how patients react to the human-like similarity (low vs. high) of medical doctors' avatars, in digital healthcare platforms. Results reveal that higher human-like similarity led to higher negative emotions, because of the effect of both perceived anthropomorphism, and creepiness. Nonetheless, the negative impact is attenuated by individuals' digital literacy, suggesting that familiarity with digital technologies – and investing in policies aimed to allow final users to “sage” the benefits derivable from new technologies – may mitigate adverse emotional responses, thereby facilitating the acceptance of such digital interventions in healthcare.

Keywords: virtual agents; medical; healthcare; anthropomorphism; creepiness; digital literacy; negative emotion

Framing of the research. Immersive technologies, including VR, AR, and MR, empowered by AI, are reshaping business propositions across various sectors such as education, entertainment, tourism, and healthcare (Wang et al., 2019). Avatars, as integral components of immersive experiences, facilitate interactions between individuals and virtual environments, particularly in healthcare settings (Miller & Polson, 2019; Sestino & D'Angelo, 2023). They serve as interfaces for teleconsultations, healthcare chatbots, and therapy applications, improving patient care and communication (see Winkler et al., 2023 for a review). However, the design of avatars must carefully balance realism and likability to avoid triggering negative responses, as explained by the Uncanny Valley theory (Kätsyri et al., 2015; Mori, 1970). Digital literacy, defined as individuals' competence in understanding and critically evaluating digital technologies, influences perceptions of virtual worlds, including in healthcare (Merchant, 2009; Kamal et al., 2020). Higher levels of conscientiousness and education correlate with more positive attitudes toward new technologies (Sunny et al., 2019). Digital literacy acts as a moderator, mitigating negative perceptions of new technologies and empowering individuals to engage responsibly (Ahmed & Rasheed, 2020; Bao & Lee, 2023). The Uncanny Valley theory is significant in avatar design, emphasizing the need to balance human-likeness to avoid negative emotional responses (Berger et al., 2018; MacDorman & Ishiguro, 2006). Based on such assumptions, anthropomorphism and creepiness may the relationship between avatar human-likeness and negative emotions (Epley et al., 2007; Mouri et al., 2012; Raff et al., 2024). Anthropomorphism enhances engagement but may lead to discomfort if avatars become too human-like, while perceived creepiness arises from incongruity between human-like appearance and behavior (Epley et al., 2007; Koschate et al., 2006; Raff et al., 2024). Digital literacy moderates these effects, helping individuals navigate technology complexities (Black & Steinkuehler, 2009; Roberts et al., 2023).

Purpose of the paper. This study delves into the impact of human-like similarity in the healthcare sector on individuals' negative emotional responses. It explores how perceived anthropomorphism and creepiness mediate this impact. Anthropomorphism, the attribution of human traits to non-human entities, and perceived creepiness are investigated as potential mediators between human-like similarity and emotional reactions (Epley et al., 2007; Koike & Loughnan, 2021). Perceived creepiness, referring to discomfort or unease, particularly in the uncanny valley of healthcare avatars, is also considered (Mouri et al., 2012; Raff et al., 2024). Through an exploratory research design, an experiment was conducted with 206 international participants, revealing that higher levels of human-like similarity positively influence negative emotions, mediated by perceived anthropomorphism and creepiness. Notably, this relationship is negatively moderated by individuals' digital literacy, which helps mitigate negative reactions. By

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unraveling these complex dynamics, this research aims to offer insights into designing healthcare avatars for better and more user-friendly virtual healthcare experiences.

Methodology. The methodology comprised a pre-test to verify the efficacy of stimuli designed to manipulate human-like similarity in avatars. Using different avatars, one human-like and the other cartoon-like, participants rated the human likeness. Results showed higher ratings for the human-like avatar, confirming the manipulation's effectiveness.

In the main study, a questionnaire was administered to assess reactions to different avatar types in digital healthcare services. Participants were assured of data anonymity and were asked to evaluate their digital literacy. They were then randomly assigned to either low or high human-like similarity conditions, interacting with a medical doctor's avatar. Reactions were measured in terms of negative emotions, perceived creepiness, and anthropomorphism. Based on our between-subjects experimental research design, the two-cell experiment has been built on two different conditions related to the two different type human-like similar avatar (low vs. high), pre-tested in the previous study.

The questionnaire was comprised three main sections. In the introduction section, participants were welcomed with a reassurance regarding the anonymity of their responses and the meticulous handling of data. It was explicitly communicated that all data would be utilized solely in an aggregated manner, aligning with rigorous scientific purposes, aimed at alleviating any apprehensions among the participants (Podsakoff et al., 2019).

At the end of this section, we asked participants to self-evaluate their Digital literacy by using items drawn by considering both the digital skills required by the "DigiComp" Framework as an tool proposed by the European Union to measure individuals' digital skills. We also utilized Reddy and colleagues' (2023) recommended self-perception measure (i.e., "Please self-rate your digital culture, and your ability to critically evaluate the reliability and credibility of information found online, considering factors such as source credibility, bias, and relevance"; $\alpha = .922$). The answer was assessed on seven-point Likert scales (1 = "Low proficiency", and 7 = "High proficiency").

In the second section of the questionnaire, participants were randomly assigned to one of two different conditions (low vs. high human-like similarity), with a medical doctor's avatar. Then, in the third section, we asked for participants' reactions in terms of negative emotions based on the scale related to the negative emotional display response drawn by Du and colleagues (2011), (e.g., "I think that the doctor's avatar looks down on me in an aloof way", "I think that the avatar frowns at me and looks clearly impatient", and so on; $\alpha = .964$), on the basis of prior studies evaluating uncanny valley assumptions, emotional responses, and psychophysiological reactions (e.g., Ratajczyk et al., 2019). The perceived creepiness measure used a scale suggested by Raff et colleagues (2024) (e.g., "This doctor's avatar would be comparable to an invisible guest in my home", "This doctor's avatar reminds me of the evil", and so on; $\alpha = .778$); and their anthropomorphism was measured using McLean and colleagues' (2019) scale (e.g., "When I communicate with the doctor's avatar, it feels like someone is near me", "The interaction experience with the doctor's avatar, is close to that with a human being", and so on; $\alpha = .957$). Finally, in the fourth section we asked for their basic sociodemographic data. Both perceived creepiness and anthropomorphism, together with participants' negative emotions, were assessed on a seven-point Likert scales (1 = "Completely disagree", and 7 = "Completely agree").

Results. Based on our research design, in this study we utilized moderated mediation analysis to investigate the effects of human-like similarity of avatars on individuals' negative emotions, mediated by perceived anthropomorphism and perceived creepiness, with digital literacy moderating these relationships. SPSS Model 87 was employed for analysis (Hayes, 2015). Results indicated a significant direct effect of high human-like similarity on negative emotions. Mediation analysis revealed that high human-like similarity led to increased anthropomorphism, which in turn increased perceived creepiness. The serial mediation effect of human-like similarity on negative emotions via anthropomorphism and perceived creepiness was significant. Furthermore, digital literacy moderated these relationships. Individuals with lower digital literacy exhibited intensified negative reactions to highly anthropomorphic avatars, consistent with the Uncanny Valley theory. Conversely, individuals with higher digital literacy demonstrated reduced susceptibility to the adverse emotional impact of anthropomorphic avatars, indicating a nuanced understanding of the artificial nature of avatars and mitigated perceived creepiness. This effect extended beyond technical proficiency, reflecting a heightened digital consciousness. Overall, the study supported the hypothesis that high human-like similarity in avatars increases negative emotions, mediated by anthropomorphism and perceived creepiness, with digital literacy playing a crucial role in mitigating adverse emotional reactions.

Research limitations. Despite the research findings, some issues may persist in calibrating the relationship between avatar human likeness and negative emotions due to various contributing factors such as virtual environments and individual differences in personality traits and cultural backgrounds. Future studies should aim to integrate these findings into technology adoption models to further illuminate perceptions of doctor virtual agents and their anthropomorphic characteristics.

Managerial implications. Based on the findings of the research demonstrating that higher human-like similarity of doctors' virtual agents leads to increased perceived anthropomorphism and creepiness, resulting in negative emotions, with a mitigating effect observed among patients with higher digital literacy, the following managerial implications can be drawn for marketers and managers. Managers. Firstly, healthcare managers should consider tailoring the design of virtual agents to strike a balance between human-like features and technological aspects. While incorporating human-like characteristics may enhance perceived anthropomorphism, it's crucial to avoid excessive resemblance to humans to prevent feelings of creepiness among patients. This necessitates collaboration between healthcare professionals and technology experts to design virtual agents that are perceived positively by patients. Secondly, by recognizing the mitigating effect of digital literacy on the negative emotional response to highly anthropomorphic virtual agents, healthcare managers should prioritize initiatives aimed at enhancing patients' digital literacy. Implementing educational

programs and resources focused on digital literacy can empower patients to better understand and interact with virtual agents, thereby reducing the likelihood of experiencing negative emotions and increasing acceptance of technological advancements in healthcare settings. Moreover, healthcare managers should provide comprehensive training and support to healthcare staff involved in the implementation and utilization of virtual agents. This includes educating staff members on the potential impact of virtual agent design on patient perceptions and emotions, as well as equipping them with strategies to effectively communicate the benefits of digital technology to patients. By fostering a culture of digital literacy within healthcare organizations, staff members can play a pivotal role in facilitating patients' acceptance of technological innovations. In conclusion, healthcare managers must recognize the importance of striking a balance between human-like features and technological functionality in virtual agent design, while also prioritizing initiatives to boost patients' digital literacy. By proactively addressing these factors, healthcare organizations can foster a culture of acceptance and appreciation for technological advancements in healthcare delivery, ultimately improving patient outcomes and satisfaction.

Originality of the paper. The exploration of the relationship between human-like attributes in virtual agents employed by healthcare professionals and patient perceptions constitutes a novel avenue of inquiry within research studies. This paper unveils a significant finding wherein heightened similarity between doctors' virtual agents and humans correlates with amplified perceptions of anthropomorphism and creepiness among patients, consequently engendering negative emotional responses. Notably, this study contributes to existing literature by elucidating that such effects are mitigated among patients exhibiting greater levels of digital literacy. This insight is particularly noteworthy as it not only enriches our understanding of human-computer interaction but also intersects with the Uncanny Valley theory, providing empirical support for its applicability within the context of healthcare technology. Thus, this research not only contributes original findings but also underscores the importance of considering individual differences in digital literacy when designing and implementing virtual agents in healthcare settings.

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Scaling Consumer Neuroscience Technologies for Individual and Societal Well-Being. A Bibliometric Analysis of Precursors

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Contributors statement:

AB and GM conceptualized the work and conducted the bibliometric analysis. AB drafted the extended abstract. GM created the graphs related to the bibliometric analysis. UF and GT contributed to the work's conceptualization, provided the necessary resources to conduct the study, and reviewed the work.

Abstract

In this work-in-progress research, we conducted a bibliometric analysis on the integration of consumer neuroscience technologies and wearable devices from the biomedical sector into studies of individual well-being. With rising consumer awareness for health monitoring, facilitated by consumer-grade devices that measure physiological parameters, there is an expanding interest in using these technologies also for marketing and consumer behavior research. This shift marks a significant development in consumer neuroscience, a field evolving to incorporate a broader range of physiological parameters through wearable technology. Such advancements raise important questions about the feasibility of gathering detailed data in everyday settings. Addressing the utilization of neurophysiological data to examine consumer behavior necessitates understanding the challenges consumers face when adopting these technologies, including ethical concerns. Our initial investigation focuses on concrete barriers to adoption, particularly concerning device usability and scalability, framed within the Technology Acceptance Model.

The ultimate goal of our research project is to investigate progress in collecting neurophysiological data from consumers and their willingness to share this information for diverse purposes, such as marketing research. Given the novelty of this area and the need for empirical data to fully understand consumer reactions to technology use, this ongoing work represents an initial step. We conducted a bibliometric analysis of existing literature from the Scopus database to evaluate the current state of research and suggest future research directions. This analysis, drawing from literature between 2009 and 2024, employs VOSviewer and Biblioshiny to examine publication trends, citation networks, and thematic developments.

Findings indicate a growing interest from 2011 until just before 2023 in employing neurophysiological tools for health monitoring and improving well-being, with a notable shift towards AI-driven research methods like machine learning and deep learning in recent years. There is a continuous emphasis on analyzing health metrics, such as heart rate variability, to assess well-being and stress levels. The geographical analysis identifies the United States, the United Kingdom, China, and Italy as key contributors to this research area. Keyword co-occurrence analysis uncovers clusters focused on psycho-physiological state monitoring, the usability of technology, behavior modification interventions, public health applications, and the integration of AI with wearable technology.

This study highlights the transformative potential of wearable neurophysiological devices in consumer behavior research, underscoring the importance of cross-disciplinary collaboration to establish standardized research methodologies. Managerial implications emphasize the significance of understanding consumers comfort and data-sharing willingness to integrate these technologies into daily life, thus enhancing consumers well-being. This paper's originality lies in mapping out a research and application roadmap for the marketing and well-being sectors, suggesting how leveraging marketing approaches can also improve individual and societal well-being.

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Framing of the research. Consumers are becoming increasingly mindful of their well-being, a trend bolstered by the widespread availability of consumer-grade devices that can quantify physiological parameters (e.g., Tikkanen et al., 2023; Fuentes and Sörum, 2019).

This technological advancement enables the objective measurement of aspects that would otherwise remain subjective, marking a significant shift in how individuals engage with their health and wellness during daily activities. This trend has sparked a growing interest in leveraging unconventional data sources also for marketing purposes (e.g., Ferreira et al., 2021). Wearable devices have not only gained a significant market presence but have also introduced new paradigms for advancing consumer behavior research.

The potential to accurately and objectively understand consumer behavior and customize products and services to enhance consumer satisfaction and well-being has its roots in the nascent field of consumer neuroscience (Plassmann and Karmarkar, 2019). This field is now expanding to include the collection of additional physiological parameters through wearable technology (Clithero et al., 2024). The emergence of this interest within marketing literature highlights crucial questions about the practicality of collecting such detailed data in everyday, natural settings.

Recognizing the utility of using (neuro-)physiological data to investigate consumer behavior requires an exploration of the barriers to technology adoption firstly faced by consumers, including ethical concerns (e.g., Wardlaw et al., 2011; Dobson et al., 2023).

Our preliminary work examines tangible adoption barriers, particularly those related to device usability and scalability, within the framework of the Technology Acceptance Model (TAM) (Davis, 1989). TAM posits that the decision to adopt technology is significantly influenced by an individual's perceptions of its usefulness and ease of use. These factors shape attitudes toward technology use, influencing behavioral intentions and ultimately leading to technology adoption. It is evident that social and cognitive aspects also play roles in technology adoption decisions.

Our research aims to explore advancements in the collection of consumers (neuro-)physiological data and consumers' willingness to share such information for various purposes, including marketing research. Using TAM as our guide, we intend to investigate how enhancing usability perceptions of devices collecting (neuro-)physiological data could positively affect the acceptance of such technologies from both consumers' and companies' perspectives.

Given the field's infancy and the need for empirical data to fully understand consumer responses to technology integration, the initial contribution of our work-in-progress research is a bibliometric analysis of existing literature. This analysis aims to assess the current state of research and propose directions for future theoretical and empirical studies. Insights from this analysis could also help businesses refine their marketing strategies to better match consumer preferences.

Our objective is to map the current research landscape at the intersection of various disciplines and explore potential applications of wearable technology in consumer behavior research. Furthermore, we aspire to lay the foundation for a comprehensive literature review, seeking to reveal practical implications for academics, marketing professionals, and healthcare providers. For healthcare providers, integrating health-related data from wearable devices into their systems offers a new perspective on health prevention (e.g., Lu et al., 2020; Bayoumy et al., 2021).

This holistic approach is crucial for understanding how this promising area can advance consumer research, particularly in leveraging marketing to enhance individual and societal well-being.

Methodology. To conduct a comprehensive and up-to-date analysis of the literature on the scalability and application of consumer (neuro-)physiological technologies for consumer behavior and well-being, our research adopted a bibliometric approach. This method allowed us to quantify and explore patterns in the existing body of work within this emerging interdisciplinary field.

Data Collection

The initial phase involved conducting a systematic search within the Scopus database, employing a set of keywords relevant to consumer neuroscience techniques and wearable devices aimed at monitoring consumer health and enhancing well-being. These keywords, which spanned both techniques and conceptual frameworks, included "Electroencephalography," "Eye-Tracking Technology," "Heart Rate Monitoring," "Wearable Technology," "Usability," and "Well-Being." We crafted our search query using these keywords connected by Boolean operators, focusing on titles and abstracts to capture relevant studies comprehensively.

We limited our search to original works and reviews published in English, excluding book chapters, conference papers, and similar publications to maintain a focus on peer-reviewed journal articles. This process led to the identification and analysis of 242 articles.

Bibliometric Analysis

For the bibliometric analysis, we employed two primary tools: VOSviewer and Biblioshiny.

VOSviewer (www.vosviewer.com) was crucial for exploring the co-occurrence networks of key terms within the literature (van Eck and Waltman, 2011), facilitating the visualization of relationships between terms. The proximity

between two items on the map indicated the strength of their association within the literature, enabling us to identify clusters of related terms and reveal the main thematic focuses within the field (van Eck and Waltman, 2010).

Biblioshiny, a web interface for the *Bibliometrix* R package, offered an accessible platform for our bibliometric analysis (Aria and Cuccurullo, 2017). It allowed for the importation, cleaning, and analysis of bibliographic data, generating interactive visualizations and network diagrams that were instrumental in deciphering the landscape of scalable (neuro-)physiological technologies for consumer research. The tool's comprehensive analysis capabilities enriched our study with insights into publication trends, authorship patterns, and geographical research distribution.

Results. Our findings are presented in three distinct sections. The first section details the temporal evolution of publications, including the annual number of publications (Figure 1) and the changing frequency of keywords over time (Figure 2). The second section examines the geographic distribution of research activities, showcasing the locations of corresponding authors, publication counts by country (Figure 3), citation rates (Figure 4), and international collaborations (Figure 5). The final section delves into keyword network analysis and the evolution of topic networks over time (Figures 6 and 7).

Temporal Evolution of Research

Our dataset reveals an overall increase in annual publication volume up to the year 2023, indicating a growing interest in scalable neurophysiological techniques for consumer well-being (Figure 1). This surge in research activity, notable from 2011, reaches its peak just before 2023.

Figure 1 – Annual Scientific Production

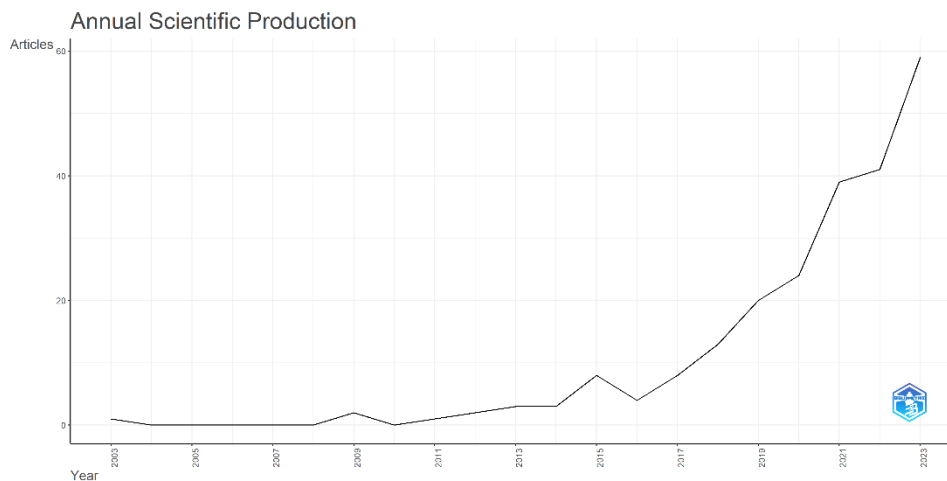


Figure 2 presents a detailed visualization of the evolution of research interests, illustrating the frequency of key terms associated with this area of study from the early 2000s to 2023. Utilizing a horizontal bar graph enhanced with bubbles of varying sizes, the graph displays the yearly frequency of each term. Here, the size of each bubble is directly proportional to the term's prevalence in that year, with larger bubbles indicating a greater frequency.

In recent years, terms related to Artificial Intelligence (AI) use, such as "machine learning" and "deep learning," have become predominant, signaling a significant pivot towards computational and AI-driven research. Concurrently, terms like "electroencephalography" and "heart rate" have maintained their prominence, reflecting a growing interest in these topics over the last few years. Similarly, an emphasis on "wearable technology" likely reflects the era's technological advances and their application in enhancing human health and behavioral studies.

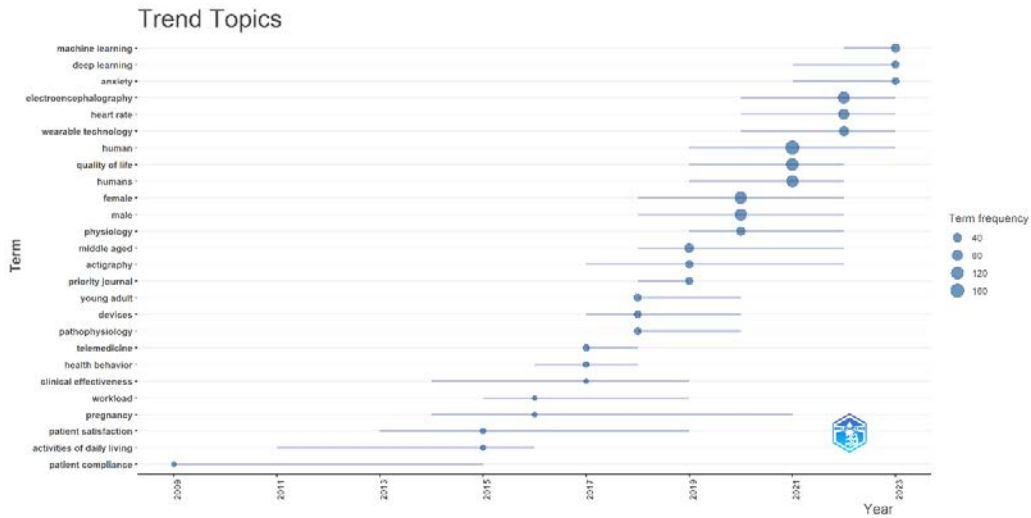
The graph also revisits the early to mid-2000s, highlighting a marked shift from "patient satisfaction" to broader terms such as "quality of life," and even focusing on specific aspects like psychological well-being, as presumably indicated by the high frequency of the term "anxiety."

Interestingly, after 2010, there is a noticeable increase in the frequency of a variety of keywords, including significant mentions of "human" and the gender-specific terms "female" and "male." This trend may signify either an increased focus on gender-specific research or a growing recognition of the importance of including sex-disaggregated data in scientific studies.

Furthermore, the emergence of terms like "telemedicine" and "health behavior" in the more recent parts of the graph underscores the growing interplay between technological innovation and healthcare practices, along with an increased focus on the behavioral dimensions of health.

Notably, the term "patient compliance" appears early in the timeline but consistently shows a lower frequency over the years, suggesting its role as a more specialized topic within the broader research domain. This progression not only reflects shifts in technological advancements and potential societal changes but also highlights the emergence of scientific interdisciplinary focuses.

Figure 2 – Trend Topics



Geographic Distribution of Research Activities Worldwide

The following figures (Figure 3 and Figure 4) provide an insightful overview of the production of scientific literature across various countries. This distribution is distinguished by publications originating from a single country (SCP, depicted in cyan) and those resulting from international collaborations, known as multiple country publications (MCP, depicted in red). The United States leads in scientific output, boasting the highest total count of scientific works. It is closely followed by the United Kingdom and China, highlighting their significant contributions to the global research landscape.

Notably, countries like the United Kingdom, China, and the Netherlands, which show a predominance of red in their distribution, demonstrate a strong inclination towards international collaboration. In contrast, countries with a higher proportion of cyan, such as the USA and Canada, tend to produce more domestically-authored publications.

Italy ranks fourth in terms of document production, displaying a balance between SCP and MCP. Following Italy, Canada and Switzerland exhibit a lower total document output compared to the leading countries but still play vital roles in the global scientific community.

Figure 3 – Scientific Collaboration across Different Countries

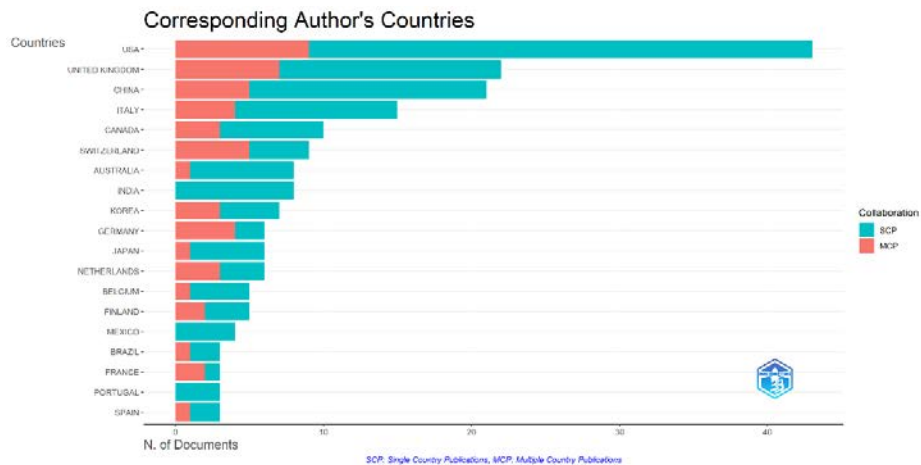
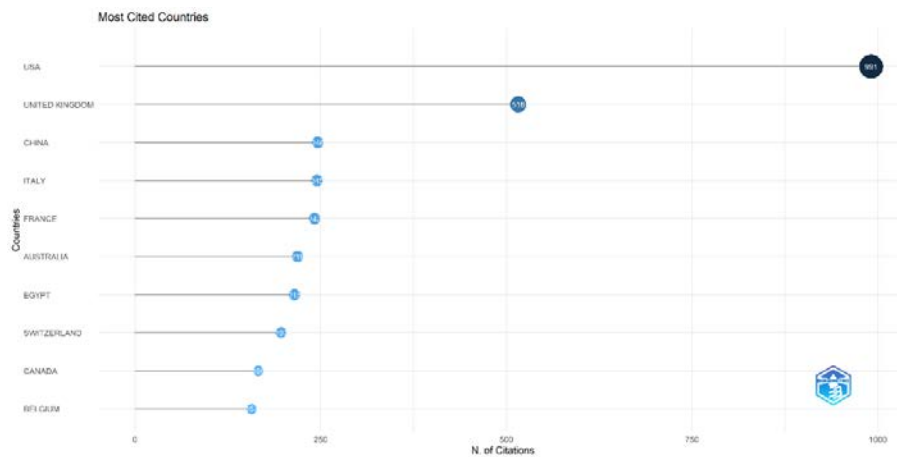


Figure 4 ranks countries according to the number of citations their scientific publications in this research area have received. In this visualization, each country is represented by a dot positioned along the horizontal axis, corresponding to the total number of citations that country's research outputs have garnered. From this visualization, it is clear that the United States is the undisputed leader in terms of citations, significantly outdistancing its closest competitors, the United Kingdom, China, Italy, and France. Following France, countries such as Australia, Egypt, Switzerland, Canada, and Belgium are notable for their closely clustered citation counts.

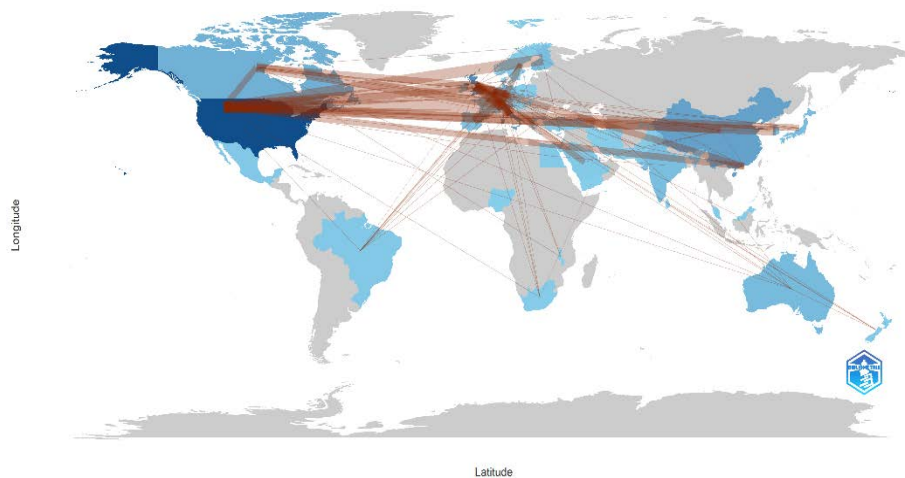
Figure 4 – Number of Citations by Country



Finally, the "Country Collaboration Map" (Figure 5) provides an informative, albeit intricate, depiction of the network of partnerships between countries. The thickness of each line directly correlates with the volume of research collaborations between two countries. The predominant presence of the United States is immediately evident, with a strong network that spans diverse geographical regions, showcasing an extensive engagement in global scientific endeavors. In contrast, the collaborative efforts of Canadian research institutions are highlighted, showing a strong orientation towards Europe. European collaboration, in turn, is represented as a tightly-knit network, underscoring the rich tapestry of inter-country research relationships within the continent. These connections not only strengthen Europe's internal scientific discourse but also project outward, demonstrating a commitment to global scientific collaboration.

Figure 5 – Countries Collaboration Map

Country Collaboration Map



Co-occurrence Analysis of Keywords

We performed a co-occurrence analysis using VOSviewer on authors keywords. By selecting the top 30 keywords that exceeded the co-occurrence threshold set at two times, we generated Figure 6 with a resolution of 20 and a minimum cluster size of 10. As a result, we identified five distinct clusters, each represented by different colors.

The first cluster, shown in red, appears to focus on the monitoring of psycho-physiological states. This cluster includes keywords such as "heart rate variability," "autonomic nervous system," and "biomarkers," along with "stress detection," "anxiety," and "mental stress." Consistent with the "Trend Topics" graph (Figure 2), we observe a growing interest in keywords related to "mental health," a vital dimension in assessing individual well-being. Notably, biomarkers and physiological parameters used to measure stress and related phenomena are linked to the activity of the autonomic nervous system (ANS). ANS is responsible for the regulation of many physiological and involuntary functions, such as heart rate. ANS is divided into two different systems, i.e., the sympathetic nervous system and the parasympathetic nervous systems, which regulate the "fight or flight" response, and the "rest and digest" activities, respectively. These systems collaborate to maintain bodily equilibrium and respond to stress (McCorry, 2007). Heart rate variability (HRV) has attracted increasing attention as an indicator of ANS activity. A higher HRV indicates better cardiovascular fitness, stress resilience, and overall health, while a lower HRV suggests stress, fatigue, and possibly underlying health issues (Shaffer and Ginsberg, 2017). HRV is applied in various fields, including consumer research, to evaluate autonomic nervous

system function and overall well-being. The red cluster also notably includes keywords related to techniques commonly applied in neurophysiology, including "actigraphy" and "electroencephalography" (EEG), which are commonly applied, for instance, in the study of sleep and circadian rhythms. With respect to these keywords, we observe a partial overlap between the red cluster and the green cluster.

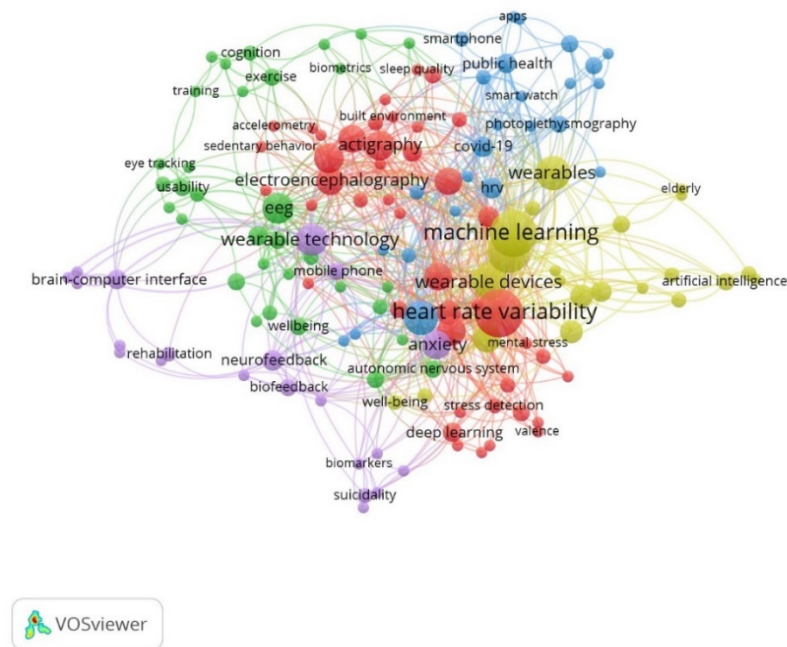
The **green cluster** primarily contains technology-related keywords, such as "wearable technology," "EEG," and "eye-tracking." Among consumer neuroscience techniques, EEG and eye-tracking are two of the most used tools. This cluster could indicate a focus on the usability of these techniques for collecting (neuro-)physiological data, and their application to human "cognition," "training," and "well-being."

The **purple cluster** emphasizes some of the possible direct applications of collected information through neurophysiological devices in order to modify individual behavior. We, indeed, notice keywords like "neurofeedback" and "biofeedback." Neurofeedback and biofeedback are methods that train individuals to enhance their health and performance by providing real-time feedback on physiological functions (Yu et al., 2018; Marzbani et al., 2016). Biofeedback offers insights into bodily functions like heart rate and muscle tension, supporting stress management and the treatment of hypertension and chronic pain. Neurofeedback specifically targets brain activity, aiding individuals in modifying their brain waves to improve cognitive performance and treat conditions such as ADHD and anxiety. Both techniques exploit the mind-body connection to foster self-regulation and awareness for better well-being.

The **blue cluster** highlights a broader potential application of these technologies, extending beyond individual assessment and intervention. Keywords like "smartphone," "public health," "apps," "smartwatch," and "COVID-19" emphasize the use of mobile technology in public health, particularly in response to the pandemic (Budd et al., 2020), indicating an interest in leveraging wearable technologies, smartphones, and apps for health monitoring and disease tracking (e.g., Lu et al, 2020; Bayoumy et al., 2021).

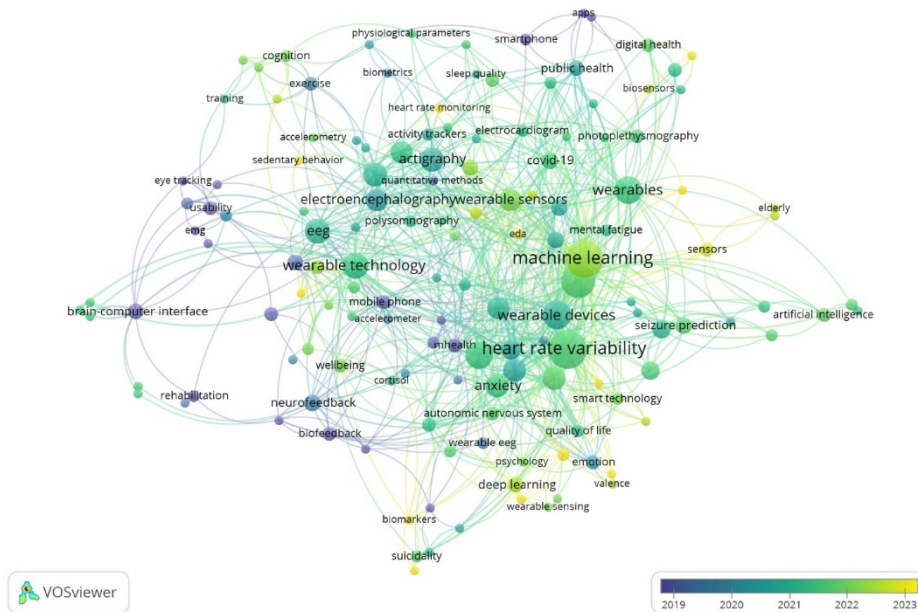
Finally, the **yellow cluster** focuses on keywords related to the integration of Artificial Intelligence with wearable technology. The occurrence of keywords such as "machine learning", "deep learning", and "artificial intelligence" can indicate a strong emphasis in recent years on the computational and algorithmic aspects of data analysis and the development of intelligent systems in the wearable technology context.

Figure 6. The Co-Occurrence Network of the Top 30 Keywords Analysed.



Lastly, **Figure 7** displays the same findings as Figure 6, providing a snapshot of the scientific landscape and its evolution over the timespan of the last few years (2019-2023).

Figure 7. The Co-Occurrence Network of the Top 30 Keywords Analysed Over Time.



Discussion. The objective of this work-in-progress research was to map the current research landscape at the intersection of various disciplines and explore potential applications of wearable technology in consumer behavior research.

For this purpose, we conducted a bibliometric analysis to assess the current state of research.

Our initial bibliometric analysis has unveiled key insights that can provide a solid groundwork for discussing the development and barriers to adoption of (neuro-)physiological technologies in consumer behavior research. Our data reveals a noticeable upward trend in scholarly publications on this interdisciplinary topic since 2011, with a peak occurring just before 2023. This trend highlights a burgeoning academic interest in the applicability and scalability of (neuro-)physiological tools for monitoring individual health and enhancing well-being, which is central to our investigation within the Technology Acceptance Model (TAM) framework (Davis, 1989). Notably, recent years have witnessed a shift towards AI-driven research in this domain, with “machine learning” and “deep learning” emerging as prominent terms. This shift could emphasize the growing importance of computational methods in improving technology implementation.

Furthermore, our analysis has consistently shown an interest in monitoring health-related metrics, such as heart rate variability, which can be applied to evaluate overall well-being/stress, also in consumer behavior research (Kakaria et al., 2023).

In a geographical perspective, our findings highlight that the leading contributors in terms of publication output and citation impact are the United States, the United Kingdom, China, and Italy, with different levels of international collaboration.

The co-occurrence analysis of author keywords paints a complex research landscape, identifying five different clusters. We distinguished a cluster mainly focused on monitoring psycho-physiological states (e.g., stress vs well-being); a second cluster containing keywords related to technology usability; a third cluster referring to behavior modification through “neurofeedback” and “biofeedback”; a fourth cluster suggesting public health applications; and a fifth cluster reporting keywords linked to the integration of artificial intelligence with wearable technology. Particularly, AI-driven systems can enhance computational capabilities for data analysis and could provide platforms that may interactively assist consumers in understanding the neurophysiological data collected through wearables, and potentially in adjusting their behaviors accordingly.

Standing at the intersection of multiple disciplines, our analysis highlights the promising applications of wearable technology in consumer behavior research, underscoring its potential to transform this field.

Limitations and Future Research Agenda. We acknowledge the descriptive nature of our ongoing work on the potential applications of consumer neuroscience and wearable technologies for enhancing consumer well-being. Opting for a bibliometric analysis has been pivotal in shedding light on the foundational aspects of this emerging, interdisciplinary field. Although recent academic efforts have made topics related to consumer neuroscience technologies more visible (e.g. Bazzani et al., 2020), they often fail to adequately explore the complex interactions between various technologies that collect physiological data and their applications in marketing (e.g., Clithero et al., 2024). We admit that our study has limitations, notably its inability to exclusively focus on scientific contributions that directly explore the

integration of scalable consumer neuroscience technologies within the marketing research landscape (e.g., Alvino et al., 2020).

Therefore, more research is needed. However, through this preliminary study, we intend to underscore the importance of disciplines that contribute to developing user-friendly devices capable of collecting (neuro-)physiological parameters for consumer behavior research. Recognizing the benefits of interdisciplinary collaboration among neuroscience, medicine, and bioengineering professionals is a crucial step forward. This collaboration would ideally lead to the creation of a standardized research protocol for applying scalable versions of such techniques in marketing experiments.

Moreover, we acknowledge the limitations imposed by organizing keywords into five distinct, somewhat arbitrary categories. As a next step, conducting a systematic literature review is essential to establish structured guidelines for both scholars and practitioners.

Managerial implications. The adoption of wearable consumer-grade devices that capture (neuro-)physiological data has significant implications for marketing scholars and professionals, as well as for healthcare providers. Current research is focused on empirically demonstrating how these technologies can be integrated into consumer daily lives to enhance health outcomes and well-being (e.g., Lu et al, 2020; Bayoumy et al., 2021). A key consideration is understanding when consumers are comfortable relying on these devices for accurate physiological monitoring to improve well-being and for what purposes they are willing to share their data. According to the Technology Acceptance Model (TAM), improvements in usability and perceived usefulness are essential for the broader adoption of wearable (neuro-)physiological devices in everyday consumer life. A positive user experience can increase satisfaction and lead to word-of-mouth recommendations, accelerating market adoption. Manufacturers and marketers should prioritize designing intuitive interfaces and effectively communicate the tangible benefits of their devices.

For businesses, the data gathered from these devices could provide useful insights beyond traditional survey methods, offering a deeper understanding of consumer behavior, including activity peaks and mood fluctuations. These insights are invaluable for crafting tailored marketing strategies and product offerings. For instance, fitness brands could offer incentives for sharing health data to gain insights for customized product development. Health insurers that encourage healthy living through wearable devices can also use the collected data to customize their services (e.g., Nayak et al., 2019). Applying these strategies to industries like hospitality can improve customer experiences, enhancing satisfaction and loyalty (Kansakar et al., 2019).

Moreover, policymakers can use neurophysiological data collected through wearables to identify vulnerable populations, and modify communication strategies accordingly, to better reach them. This would increase the impact and relevance of institutional communication during emergencies, as well as the effectiveness of public health messages. Specifically, healthcare providers stand to benefit from this data by targeting services to patients and employing this knowledge to increase the effectiveness of public initiatives for health prevention.

Originality of the paper. We conducted a bibliometric analysis to explore the development of consumer neuroscience and the use of wearable technologies in consumer research. This analysis, which examines publication patterns, citation networks, and thematic evolution, reveals how discourse in the field has evolved and identifies key areas ripe for future research. By doing so, the analysis acts as an essential tool for outlining the field's progression, pinpointing literature gaps, and suggesting how incorporating the Technology Acceptance Model (TAM) into consumer neuroscience and wearable technology research can open new avenues for enhancing consumer well-being. In a recent conference paper, Alvino et al. (2023) attempted to apply TAM to understand how marketing professionals adopt consumer neuroscience tools. Building on their work, we suggest broadening the range of tools in consumer neuroscience to include devices that collect physiological data (Clithero et al., 2024), indicating the potential for technological advances from the biomedical sector to influence consumer behavior research, offering significant benefits to individual and societal well-being on a wider scale.

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Unveiling the Dynamics of GPT Technology Adoption: Assessing Trust in Technology and Self-Efficacy's Influence on Consumer Behavior

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Abstract

This study explores the dynamics of user engagement with Chat GPT, an AI-powered chatbot, through the lens of trust, self-efficacy, knowledge, and technology acceptance. Utilizing a task-based experimental design, we examine how these dimensions influence technology adoption among two distinct user groups: "Current Users" and "New Users". Our research seeks to unravel the influence of these variables on individual behavior and the intricacies of decision-making in the realm of AI chatbot engagements, delivering comprehensive insights into the catalysts and impediments to adopting technology. The present research makes a valuable contribution to the wider thematic of consumer-technology relationship, emphasizing the need for enhancing digital literacy and trust to promote wider acceptance and satisfaction with emerging technologies both for current and new users.

Key words: Chat GPT; Knowledge; Self-Efficacy; Trust; Technology Adoption; Protocol Analysis

Framing of the research. *Understanding how consumers interact with technologies based on intelligent agents as well as artificial intelligence, has attracted a wide debate over different scholars (Mariani et al., 2022; Coombs, 2020, Puntoni et al., 2020). Several scholars have directed their research towards different variables, including knowledge, technology acceptance, self-efficacy, and trust. In this paper, the aim is to investigate these variables, the relationships between them, and the consequences they exert on consumer choice.*

Cegarra-Navarro et al. (2014) define knowledge as "the knowledge and ability to use specific technologies such as the Internet". Technological knowledge is not only about understanding emerging technologies, but also about the ability to use them. Furthermore, knowledge can contribute to improving user interaction, technology acceptance and facilitating personal decisions in multiple contexts (Kelly et al., 2023). Consequently, this study aims primarily to explore how pre-existing knowledge and experience play a role in creating a favorable environment for the acceptance of technology. Within a setting marked by significant technological progress and swift changes, users form new preferences through utilizing the comprehensive scope and detailed insights of accessible knowledge (D'Angelo and Valsesia, 2022).

According to Tuu et al. (2021) there is a positive association between technology experience and acceptance of mobile technology, as consumers with high technology experience often perceive the use of mobile devices as easier, more convenient and useful. Technological experience is seen as a combination of ease of use, access to knowledge, and flexibility in adapting to new situations.

Consumers with higher expertise associated with the applied technology are more likely to obtain more effective results, since their knowledge foundation is highly developed. "The facilitation of AI adoption is determined by a variety of factors, including users' knowledge, available resources, and the accessibility of guidance from marketers or peers (Mahardika et al., 2019). Berkowsky et al. (2017) point out that consumers with high knowledge are more inclined to demonstrate a positive attitude due to their familiarity and experience.

A high level of technology knowledge could increase users' confidence and their ability to effectively use the technology, thus promoting the overall improvement of personal ability.

Furthermore, Nyberg et al. (2022) suggest that knowledge positively correlates with self-efficacy, which in turn is a significant predictor of performance. They link scientific competence with self-efficacy, explaining that it encompasses two dimensions: knowledge of scientific content and the ability to reason scientifically. Their research highlights that positive self-efficacy is connected not only to academic achievements but also influences motivational processes, self-regulation strategies, self-perceptions, and interests, as evidenced by the works of Bandura & Schunk (1981), Klassen & Usher (2010), Pajares & Valiante (1997), and Schunk (1995). The authors showed how the investment in persistence and effort in completing challenging tasks is higher in individuals with a positive level of self-efficacy (Pajares, 1996). Based on Bandura's theory of social cognition (1977), self-efficacy is classified as a competence belief and is understood as the

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belief in one's ability to cope with a future situation or task. The results show significant relationships between task-specific self-efficacy in scientific reasoning and performance in scientific reasoning, as well as between task-specific self-efficacy, scientific content knowledge and performance in scientific content knowledge.

Self-efficacy is characterized as the conviction in one's capability to accomplish a specific task under given circumstances, reflecting confidence in one's abilities rather than the actual possession of specific skills (Bandura, 1977). Within the framework of Self-efficacy Theory, such a construct is more precisely conceptualized as the confidence an individual has in their capacity to effectively influence their environment through the successful completion of tasks or resolution of problems. This concept plays a pivotal role in theories of motivation, impacting areas such as academic motivation and career decision-making

When people with high self-efficacy achieve a certain goal, there is a good chance that their next goal will be more challenging. And if a goal is not achieved, the way people react varies from person to person. Some respond with renewed commitment, others with despair and apathy. The results can be self-reinforcing. On the other hand, successfully achieving goals can increase self-efficacy and thus the future likelihood of success. Numerous investigations have empirically confirmed the impact of self-efficacy on technology adoption behaviour (Holden et al., 2011; Zhang et al., 2017; Ellen et al. 1991). Consumers with high self-efficacy show a stronger motivation to perform specific tasks than those with low self-efficacy, indicating a higher confidence in achieving positive outcomes (Noe and Wilk 1993; Tannenbaum et al. 1991). Consumers with an elevated degree of self-efficacy in technology demonstrate greater involvement in the use of technology-based services (Dabholkar and Bagozzi, 2002), accompanied by a more favourable attitude and a greater intention to use such services than those with a lower level of self-efficacy in technology. It clearly emerges that the consumer's level of self-efficacy may anticipate the adoption behaviour of new technologies by individuals.

In contrast, Roy et al. (2019) focus on users who do not have high knowledge. Their research suggests that consumers with low technology knowledge may show lower levels of self-efficacy and trust towards new technologies, which may lead to lower technology acceptance. Their lack of familiarity and experience with technology may lead to uncertainties and doubts about their ability to use new technologies effectively, their trustworthiness and the usefulness of the technology. In essence, consumers who are less familiar with the technology used tend to have less confidence and feel less secure in its use, which may make them less likely to accept it.

It follows that unfamiliarity directly influences the practice and perception of new technologies, which suggests that greater familiarity with the technology might encourage more deliberate practice (Colvin, 2010).

According to the author, in fact, years of deliberate practice can even change an individual's body and mind. Several studies show that by continuously repeating the right exercises and putting them into practice, an average professional can transform into an exceptional performer (Bandura, 1977; Colvin, 2010 ; Kodden, 2014).

Analyses show that experience with technology, autonomous learning and socio-economic background are determinants of variations in ICT self-efficacy. These findings suggest that ICT self-efficacy is closely related to computer literacy, even when controlling for other baseline characteristics and contextual variables.

These results suggest a very clear distinction between computers self-efficacy and computer competence, showing that an individual's comfort level with computer use may not match her/his capabilities to properly handle the computer. In other words, a person might feel confident in using digital technologies without necessarily having a thorough knowledge of them.

In addition, research emphasize how ICT competence substantially anticipates ICT self-efficacy. Extended engagement with technology gradually enhances understanding and skills, leading to more effective use of Information and Communication Technology (ICT) across various contexts. Bandura (1977) further notes that an individual's perceived or potential capability to adeptly handle a product is mirrored in their evaluative and behavioral responses towards the product.

Therefore, self-efficacy is believed to play a significant role in shaping the development of beliefs and behaviors related to intentions to use technology, while also having an indirect impact on the perceptions of its ease of use and its perceived value. Self-efficacy is pivotal for an exhaustive comprehension of how individuals perceive and adopt new technologies. Individuals with higher levels of self-efficacy are more likely to view new digital technologies as user-friendly and beneficial, which diminishes their resistance to change and enhances their readiness to embrace these innovations. Notably, consumers who are more receptive to AI technologies exhibit a more pronounced positive influence on their level of self-efficacy compared to those who are less receptive (van Esch et al., 2021). This indicates that self-efficacy not only directly influences individuals' attitudes and behaviors towards technology but also does so indirectly. By nurturing confidence in one's capabilities, the encouragement of adopting and utilizing new technologies can be significantly enhanced. People's confidence in their ability to use technology (self-efficacy) and their perception of how easy it is to use (ease of use) affect their decision to adopt new technologies.

However, self-efficacy is not the sole factor that matters: Trust also plays a significant role. According to Tams et al. (2017), trust can decrease feelings of emotional arousal and anxiety, increasing self-efficacy (Kelly and Noonan, 2008). Trust helps reduce negative emotions and promotes self-efficacy (Bandura, 1977; Marakas et al., 1998). Self-efficacy in using technology can have different impacts on how well technology is used after its adoption. Self-confidence affects how technology is used after adoption, leading to better job performance and successful management of strategic changes

In their study, Zheng Yan et al. (2014) describe trust as a complex concept involving security, belief and expectations about reliability, integrity, protection, capability, and other characteristics of an organization.

With his contribution, Areej AlHogail (2018) points out that trust can be perceived as a significant factor that influences the behavioral intention to use an IoT technology and has a strong effect compared to other concerns such as privacy. Falcone and Sapienza (2018) indicated several reasons why users may not grant high levels of trust, as they may fear that a task will not be completed as expected or at all, or even that harm will be caused. Consumer acceptance of new technologies relies heavily on building their trust: lower levels of trust in the proposed technology can hinder its adoption.

This research aims to provide a novel perspective on the relationship between consumers and their attitudes towards technology, specifically focusing on three variables: trust, self-efficacy and technology adoption.

Purpose of the paper. The use of advanced technologies, specifically Chat GPT, can influence consumers' behaviors. Building on existing knowledge, three critical factors influence the attitude toward the use of Chat GPT: trust in technology, perceived usefulness, and self-efficacy. Given that GPT technology is a relatively new category for consumers and has not yet been thoroughly explored, our research aims to delve into how users' prior knowledge impacts their perceptions, evaluations, and decision-making processes when using Chat GPT. This paper aims at exploring the key variables of technology acceptance, self-efficacy and trust, and how those are framed depending on the level of users' pre-existing knowledge.

Methodology. This study adopts an exploratory approach aimed at understanding the interaction processes between individuals and a complex technology like AI. In particular, the goal is to understand the mental processes that drive the use of AI and then to explore its antecedents. Consistent with the theoretical assumptions cited, we believe that the research can be useful in characterizing the subjective drivers that fuel the antecedent of AI adoption: self-efficacy and trust. To better address this task, we run four personal in depth interviews based on protocol analysis technique.

This approach allows users to verbalize their thoughts – the think aloud method - while completing a specific task. By doing so, we aim at gaining insights into the cognitive processes that shape users' interactions with Chat GPT. Protocol analysis is a well-established technique in cognitive psychology, with researchers like Newell and Simon (1972) and Ericsson and Simon (1980, 1993) emphasizing its value for investigating cognition from an information-processing perspective (Smagorinsky, 1998).

The interviews took place in October 2023. The study involved four participants, split into two groups based on their familiarity with ChatGPT. Group 1 comprised users knowledgeable about ChatGPT's capabilities and applications, while Group 2 consisted of users with no prior experience and knowledge on the AI chatbot. This distinction allowed us to examine variations in their approaches, experiences, and perceptions between novices and expert users.

We formulated the questions using wording that refrained from expressing either agreement or disagreement with their responses, ensuring no pauses occurred between questions. To adhere to the protocol analysis meticulously, we established a set of procedures both prior to and during the interviews. Before initiating each protocol, we assigned a unique code to each interviewee and prepared a protocol sheet detailing the interview date, along with the start and end times of each session. The interviews averaged 14 minutes in duration, with the longest extending up to 18,19 minutes and the shortest lasting 11,33 minutes.

Participants engaged in a task where they utilized the AI assistant Chat GPT to plan a trip. Throughout the process, they shared their thoughts, choices, questions, and approaches in real-time.

The study has been divided in four steps as follow:

- (a) **Preparation and Orientation:** All participants learnt about the study's goals and how Chat GPT works. They received specific instructions on the task they would perform (Figure 1). They had a reference table with tasks and subtasks to follow, in order to plan a trip.

Figure 1. Reference table with tasks and subtasks

Generic Task	
1.	Choose a destination to visit
Specific Tasks	
2.	General information on required visas and mandatory/recommended vaccinations
3.	Identify the best time of year to go visit
4.	Choose the area(s) to stay in
5.	Find restaurants serving local cuisine
6.	Identify the main places of interest
7.	Check the weather to decide what clothes to bring
8.	Choose any additional activities to do

Source: Our elaboration

- (b) **Interaction Sessions:** Each participant had a one-on-one conversation, without any distractions, with Chat GPT while planning a trip. During these sessions, participants shared their thoughts as part of a "think aloud" process.

- (c) *Data Collection: The interactions were recorded and analyzed later. Participants' verbalizations were transcribed and categorized in two types of events - actions and objectives - based on predetermined variables, including trust, self-efficacy, and technology acceptance.*
- (d) *Follow-up interviews: After the sessions concluded, users participated in a debriefing interview. This interview aimed to gather their insights on the overall experience, their satisfaction and their perspectives on the variables investigated in the study, to have a more profound comprehension on how familiarity with new technology affects the users' experience.*

Results. *In the results section of this study, the interactions of four subjects with Chat GPT 3.5 for the purpose of plan a trip are analyzed, using the protocol analysis method. Participants fell into one of two groups based on their familiarity with the chatbot: "Current Users" who were very familiar with Chat GPT and "New Users" who had little to no prior knowledge. The study aims to understand how factors like trust, self-efficacy, and technological adaptation influence the user experience, and how these factors change based on the users' pre-existing knowledge of the technology.*

I. Trust

The level of trust towards Chat GPT significantly diverges between the two groups. "Current Users" exhibit trust that has matured through repeated use of the platform, translating into specific expectations regarding the system's functionalities and limitations that the chatbot has to offer, such as the inability to display maps or to have direct links with other websites for obtaining an accurate price estimate. The interviewee No. 2 shows a form of surprise upon seeing the proposed results. However, he/she retains unaltered trust in the tool and asks for the information to be specified in a more specific field: "So I hadn't chosen whether I wanted to go to the Mediterranean or the Atlantic, and I'm more interested in Costa del Sol. So, I will ask for more information, and I will say that I am interested in Costa del Sol".

This category highlights a greater critical awareness towards the responses received and, when expectations are not met, negative feelings towards the chatbot are generated (e.g., "Ah... It does not show this information, I need to look it up by myself"; " However, he can't give me the answer").

Conversely, "New Users" rapidly develop trust based on the accuracy and relevance of the information received, despite a previous lack of familiarity with the interface. Their positive experience, culminating in informative satisfaction, underscores the efficacy of Chat GPT in meeting informational needs, even without prior interactions with the AI powered chatbot (e.g., "It is explaining strategies to get cheaper flights, also clearing the research history is useful. Great, I will do this"; "It is suggesting me many alternatives"; "I am very satisfied, it gives very detailed information and even more choices. I give it positive feedback, I like it.").

II. Self-Efficacy

The self-efficacy demonstrated by subjects reflects differences in the approach to using Chat GPT. "Current Users" exhibit high self-efficacy levels, navigating the interface easily and with confidence and conducting detailed searches relevant to their objectives, resulting in longer interaction times. This behavior indicates a greater propensity to deeply explore the platform's informational capabilities and all the functions that it has to offer. During the hotel search phase, respondent No. 2 asked about the best areas for accommodation and accepted one of the options suggested by the chatbot, without questioning the reliability of the information provided. At that moment, they were pleasantly surprised ("Ah, it even directs me to hotel booking sites") by the ability to seamlessly continue their search on hotel booking websites recommended by Chat GPT, finding it beneficial to proceed directly from there without the need to open a new search tab. On the other hand, "New Users" display an increase in self-efficacy levels throughout the experiment. The ease of use and intuitiveness of the interface facilitate quick adaptation, enabling individuals without prior experience to feel capable of efficiently using the technology. Initially, despite a brief initial explanation of Chat GPT's functionality, the non users struggled to understand how the chat bot worked. The users struggling with understanding which type of tasks Chat GPT could do, initially asked more general questions before becoming more familiar with the chatbot's functionality. Subsequently, as the depth of the responses was better understood, more complex queries were developed, which at some point would allow the users to bypass some steps in the research by having two or more questions in one single query. There is observable evidence of increasing efficacy with which inquiries are posed to Chat GPT. The initial questions tend to be generic, such as "I would like to visit Paris, when is the weather good?" However, subsequent queries, following a period of acclimatization to the chatbot and a realization of its capabilities, become more specific and pragmatic: "How and where can I purchase tickets at a reasonable/discounted price?" Consequently, new users have achieved an increasingly higher level of self-efficacy, attributable to a growing awareness of the applications and potentiality of Chat GPT.

III. Technology Adoption

The propensity to adopt Chat GPT as a support tool in organizing trips is influenced by a combination the variables of trust and self-efficacy. "Current Users" approach the platform with a critical but informed attitude, demanding advanced functionalities and carefully evaluating the accuracy of the information provided, sometimes comparing it with information previously obtained from other channels ("as a starting point is very valid, but I still want to verify this information or look for more, to make sure I haven't missed anything" – Interviewee No. 1). This group represents a case of mature technological adoption, where prior experience shapes expectations and interaction with the chatbot.

Conversely, "New Users" demonstrate openness to adopting Chat GPT, motivated by the immediate informational efficacy experienced and the surprise generated by the speed and ease of use. Respondent number 2 experienced a moment of surprise when seeking advice regarding the local culinary specialties, due to the fact that he/she had never tried such dishes and consequently lacked any expectations: "ok, obviously I do not know any of these dishes, but they are described in a clear way, so I am able to imagine them in my head. My interest is piqued by the Pad Thai, because i really like

noodles, and I would not have understood that they were similar if I did not read the description." In this instance, Chat GPT offered a concise yet accurate explanation, facilitating the user's formation of expectations concerning the food and providing an answer to a question pertaining to an as-yet unarticulated need regarding the specific ingredients and appearance of the dish. This initially positive experience suggests a higher probability of integrating Chat GPT and similar technologies into future activities, denoting an initial phase of technological adoption driven primarily by perceived usability and a positive user experience.

Research limitations. Despite its insightful contributions, several limitations should be acknowledged due to its current development stage.

First, the limited sample size and specificity may restrict the generalizability of the findings. More diversified or larger samples might be useful to enhance the representative power.

Secondly, the methodology developed around protocol analysis gives good in-depth qualitative insights but lacks the wider landscape that results from quantitative means could bring for statistical generalization. We are actively working on the further development of this analysis and on the design of a quantitative analysis model.

Furthermore, focusing such research only on ChatGPT would limit the generalizability of its relevance for other new technologies. Broadening the research to other technologies could enrich the results of the study.

In that way, while the present study offers salient first insights into how users interact with AI chatbots, duly considered limitations will balance the findings and guide future research directions that may be attempted to be advanced within this rapidly evolving domain of consumer-technology relationships.

Managerial implications. The findings of this study highlight that trust, self-efficacy, and technological adoption are key factors in users' interactions with Chat GPT. Understanding these variables provides crucial insights for the development of strategies aimed at improving user engagement and refining technological platforms according to users' needs and expectations.

This aligns with the notion that trust in technology not only reduces hesitancy but also fosters a sense of security and reliability among users (Tams et al., 2017; Areej AlHogail, 2018).

Moreover, the role of prior knowledge and experience in shaping user interaction with Chat GPT cannot be overstated. Our findings indicate that technology-educated users have a nuanced understanding and a critical approach towards adopting and using Chat GPT, highlighting the importance of technological knowledge in navigating the complexities of modern digital tools. The study also sheds light on the initial barriers faced by users with limited technological and functional knowledge of Chat GPT. The progression from a state of uncertainty to one of confidence and trust in Chat GPT's capabilities illustrates how important intuitive design and user experience are in mitigating these barriers, affirming the usefulness of ease of use and perceived utility in the adoption process. Recognizing the diversity in users' technological background and leveraging this variability can lead to more personalized and efficient user interactions. Advanced users could be offered more complex functionalities, while newcomers might benefit from a more guided experience.

Originality of the paper. This research contributes to the ever-present discourse on consumer-technology interaction by highlighting the interrelated roles of knowledge, self-efficacy, trust, and technology acceptance. Our work integrates these factors within the framework of AI chatbot interaction, offering a comprehensive understanding of how they collectively influence technology adoption and user satisfaction.

This integrated approach not only advances our theoretical knowledge of consumer-technology relations but also provides practical insights for enhancing user interaction with emerging technologies. Furthermore, by differentiating between "Current Users" and "New Users," this study offers nuanced perspectives on the adoption and utilization of Chat GPT, highlighting the importance of user-centric strategies in technological design and implementation.

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Investigating Perceptions of Brand Personality and Consumer Reactions in the Automotive Industry by ChatGPT

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Abstract

This research explores brand personality perceptions in relationship with the generative AI platform ChatGPT. The initial phase of the research is to confirm whether ChatGPT manifests distinct brand perceptions and to comprehend how the brand perceptions are shaped. Once ChatGPT is shown to form brand perceptions, these perceptions are presented to consumers in the form of brand statements. The second phase of the research is to analyze the effects on consumers when informed that these statements are generated by ChatGPT compared to traditional search engines. This research is developed within the context of the automotive industry, with a specific focus on fourteen automotive brands listed in Interbrand's 100 Best Global Brands of 2022. Brand perceptions generated by ChatGPT are investigated employing a semi-structured approach, where direct queries are posed to ChatGPT to gain insights into its processing of brand perceptions. To analyze and evaluate ChatGPT responses, Aaker's (1997) well-established framework of brand personality, encompassing five dimensions, is applied. The effects on consumers are examined using an experimental design with participants divided into two groups. Both groups are presented with identical brand statements from three automotive brands. The only difference is that participants will be told that the statements are derived from ChatGPT or a traditional search engine. The study will conclude with in-depth interviews to the participants. The study's significance lies in understanding how ChatGPT interprets and presents brand perceptions, considering the potential influence this AI platform may have on shaping consumer attitudes, particularly while it evolves into a search engine. As consumers increasingly rely on ChatGPT for product evaluations and post-purchase interactions with brands, the platform offers valuable insights into brand personality when prompted, facilitating the rating of different brand personality dimensions.

Key words: Artificial Intelligence 1, ChatGPT 2, Brand Personality 3, Brand Comparison 4, Automotive Industry 5.

Framing of the research. ChatGPT is an Artificial Intelligence (AI) platform developed by OpenAI and introduced to the public in November 2022 (Pavlik, 2023). ChatGPT has attracted significant attention due to its utilization of natural language processing and machine learning techniques to enable interactive conversational capabilities (King, 2023). In academic literature, ChatGPT has been defined as "a large language model developed by OpenAI that uses deep learning techniques to generate human-like responses to text-based prompts. It is trained on a large corpus of text data using unsupervised learning techniques to learn the statistical patterns and regularities of human language and use that knowledge to generate coherent and contextually appropriate responses" (Paul et al., 2023: 1213). Through the analysis of available information and the utilization of learning mechanisms, ChatGPT generates text-based responses to user inquiries. Its rapid adoption has been remarkable, with over one million users registering on the platform within five days of its launch, surpassing the growth rates of successful platforms like Instagram, Facebook, and TikTok (Bailey, 2023).

The advent of ChatGPT has had a profound impact on the financial landscape, particularly in the domain of artificial intelligence investments. Shares associated with AI ventures experienced a substantial surge in value, driven by ChatGPT's demonstrable potential in language processing applications (Hajric and Shen, 2023). Well-known economists have even posited that ChatGPT may be the most disruptive technology of the decade, similar to a "calculator in writing" in the words of Brynjolfsson (Aldrick, 2023). While acknowledging certain characteristics of a transient investing fad in ChatGPT, Morgan Stanley recognizes that technology holds the potential to revolutionize text-writing and information-gathering (Ponciano, 2023).

In the domain of information retrieval, ChatGPT is widely regarded as more advanced than Google search engine (Paul et al., 2023). While Google inundates consumers with extensive information that requires manual filtering, ChatGPT stands out by generating tailored and coherent responses that align with users' queries. As ChatGPT

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continuously self-improves and integrates real-time data, there exists a tangible possibility that it could eventually surpass Google in terms of information retrieval (Paul et al., 2023). As ChatGPT progresses towards its integration into a search engine, research suggests that consumers will increasingly rely on this platform during their decision-making process and include it in their consumer journey (Dwivedi et al., 2023). Unlike other search engines, ChatGPT can answer customer inquiries directly rather than providing a list of results. It may therefore offer a unique opportunity for marketers to influence consumers at various stages of their purchasing experience. Notably, information search is crucial in the consumer decision-making process as consumers try to decrease the perceived risk associated with a purchase by gathering brand-related information from online and offline sources (Basso et al., 2019; Hansen, 2005; Puccinelli et al., 2009). As ChatGPT can be used as a research-gathering tool, marketers can incorporate the AI interface into relevant touchpoints to enhance AI-based customer conversations and influence customers' decisions with highly relevant content. Dwivedi et al. (2023) highlight numerous potential applications of ChatGPT in marketing, including the development of targeted marketing campaigns, the optimization of content marketing and chatbot-based customer service, the enrichment of the customer experience, keyword generation and recommendations, the conduct of marketing research, and brand comparison analyses (Dwivedi et al., 2023).

The potential of ChatGPT appears promising in the marketing field, although marketers face specific challenges. While ChatGPT offers a valuable tool for content curation, similar to Google's functionality, its use of robust database models and AI-driven learning algorithms suggests that traditional approaches, such as keyword-based content or search engine marketing, may not deliver the desired results within the ChatGPT structure. Consequently, successful marketing strategies necessitate a well-defined collaboration between marketers and OpenAI to effectively navigate the complexities of advanced AI algorithms (Dwivedi et al., 2023). Managing the alignment, or potential misalignment, between the intended and perceived brand personality becomes crucial for marketers, as any discrepancies can impact consumer perceptions and potentially originate reputational harm. According to Paul et al. (2023), ChatGPT can offer several advantages for consumers. Primarily, it can elevate consumer engagement by providing an interactive experience that surpasses traditional communication methods. Additionally, it can enhance customer service by delivering prompt responses and efficient issue resolution. Furthermore, ChatGPT can facilitate shopping personalization by generating tailored recommendations, marketing messages, and shopping tips based on consumer behavior and preferences (Konya-Baumbach et al., 2023). The platform can also foster social interaction and communication practices. (Haluzá and Jungwirth, 2023). In conclusion, ChatGPT can improve marketing campaigns by generating compelling messages that deeply resonate with consumers, leading to heightened engagement and conversion rates. ChatGPT, despite its numerous benefits for consumers, also shows several potential drawbacks that demand careful examination (Paul et al., 2023). Bias poses pressing concern since ChatGPT can reinforce biases inherent in its training data, resulting in unfair outcomes and cases of discrimination (Aker et al., 2021; Ray, 2023). Furthermore, the generation of misinformation by ChatGPT raises issues of trustworthiness, especially in contexts where accuracy and truthfulness are essential, such as in marketing claims and product information (Floridi, 2019). The model's limited contextual understanding may produce nonsensical or inappropriate responses, with potential risks for brand reputation. Addressing privacy issues is important given the collection and storage of consumer data, which necessitates robust data protection measures. Ethical considerations encompass the accountability of AI platforms, the presence of biases in internet-based data, and potential impacts on users' moral judgments (Bredibach and Maglio, 2020). Lastly, ChatGPT's capabilities can be exploited for malicious purposes, such as generating phishing emails or deceptive content, highlighting the importance of responsible and ethical usage.

Purpose of the paper. Given the potential utility for both academic and non-academic pursuits, ChatGPT has become a "cultural phenomenon" (Thorp, 2023, p. 313). By utilizing ChatGPT's capabilities, this research seeks to offer valuable insights and implications for businesses to better understand and manage their brand personality perceptions, thus enhancing their brand strategies in the digital age. Adopting an original perspective, the aim of this study is to investigate whether ChatGPT exhibits human-like attitudes, namely brand-specific perceptions, and, if so, to explore the underlying mechanisms through which these perceptions are processed by consumers. By investigating the interplay between ChatGPT and brand perception, this research contributes to the growing literature on the impact of AI platforms on consumer behavior and related brand management practices (Dwivedi et al., 2023; Gursøy et al., 2023; Konya-Baumbach et al., 2023; Mich and Garigliano, 2023; Paul et al., 2023).

The present paper aims to fill a significant research gap by examining the impact of the AI platform ChatGPT on branding strategies, an area that has been largely overlooked in both academic and non-academic literature. To the best of our knowledge, no previous studies have examined whether ChatGPT possesses distinct and independent perceptions of established brands, along with the mechanisms it uses to process these perceptions. As emphasized by Paul et al. (2023: 1219), "researchers could examine the extent to which ChatGPT-generated responses influence consumer behaviour, such as purchase decisions, product evaluations or brand perceptions". Similarly, Dwivedi et al. (2023: 16) state that "studies should explore how generative AI technologies can benefit marketing in customer services, customer engagement and experience, content curation and development, marketing research, lead generation, commerce, and promotional activities". By delving into the process of brand perception by ChatGPT, this study takes a first crucial step toward understanding how the platform demonstrates human-like attitudes, specifically focusing on brand-specific perceptions of brand personality.

In line with the study's objective, we examine the potential for ChatGPT to act as a medium for brand values, embodying the characteristics that define automotive brands and thus shaping the way consumers may relate to them (Manis and Madhavaram, 2023). Through this lens, the research not only contributes to theoretical advancements by

highlighting the intersections of AI and brand personality but also offers actionable insights for marketers aiming to integrate AI into their strategic toolkit (Chintalapati and Pandey, 2022). To examine the potential brand perceptions of ChatGPT, the well-established framework of brand personality dimensions proposed by Aaker (1997) is adopted. Brand personality is defined as “the set of human characteristics associated with a brand” (Aaker, 1997: 347). This framework allows the identification of distinct typologies of brand personalities and assigns a quantifiable scale to each dimension, enabling a comprehensive understanding of brand perception. By incorporating a scaling system, the framework provides a structured method for theoretical generalization regarding the symbolic utilization of brands (Aaker, 1997; Freling et al., 2011; George and Anandkumar, 2018; Radler, 2018; Saeed et al., 2022). Moreover, the framework and its associated scales can be readily extended to various product categories, ensuring its versatility and applicability.

Aaker's framework comprises five dimensions that exhibit high representativeness, reliability, and variance in the evaluation of brand personality: sincerity, excitement, competence, sophistication, and ruggedness. The dimension of sincerity reflects attributes such as honest, down-to-earth, and wholesome, which are essential for establishing a positive brand image. Excitement emphasizes characteristics such as daring, spirited, and imaginative, which contribute to a brand's capacity to evoke enthusiasm and engagement among consumers. Competence pertains to qualities associated with reliability, intelligence, and success, signaling a brand's capability to deliver superior performance and meet customer expectations. Sophistication embodies traits of elegance, upper class, and charm, conveying brand's aspirational and premium qualities. In conclusion, ruggedness represents attributes of toughness, durability, and resilience, which portray a brand as robust and suitable for challenging environments (Aaker, 1997).

By employing Aaker's (1997) framework, ChatGPT's perception of brand personality can be comprehensively explored in the automotive industry. This framework facilitates an analysis of the extent to which ChatGPT aligns with or deviates from the identified dimensions and their associated scales, thus providing valuable insights into the brand perceptions that may emerge. Moreover, through an examination of the alignment between the framework's dimensions and human personality dimensions, as identified by Briggs (1992), this research aims to gain a profound understanding of how ChatGPT's brand personality can embody and align with specific brand attributes. Three brand personality dimensions align with three dimensions of the "Big Five" human personality traits proposed by Briggs (1992). Agreeableness and sincerity both reflect warmth and acceptance, while extroversion and excitement indicate sociability, energy, and activity. Conscientiousness and competence embody responsibility, dependability, and security. Conversely, the dimensions of sophistication and ruggedness deviate from any of the "Big Five" traits identified by Briggs (1992). This pattern suggests that brand personality dimensions may operate differently or influence consumer preference for distinct reasons. Notably, dimensions like sincerity, excitement, and competence tap into innate aspects of human personality, while sophistication and ruggedness align with traits that individuals aspire to but may not necessarily possess. These insights stress the complexity of brand personality and indicate that different dimensions may play diverse roles in shaping consumer perception and preference. In recent years, scholars in the domain of social psychology have extensively examined how people form impressions about brands. Kervyn et al. (2012) posited that consumers establish relationships with brands similarly to those with individuals. In their theorization, they adapted the Stereotype Content Model (SCM) (Fiske et al., 2002), which is one of the most influential theoretical frameworks in the field of social cognition. According to the model, individuals perceive social groups by focusing on two fundamental dimensions: warmth and competence. Individuals rapidly assess warmth, which refers to the perceived intentions of others, and competence, which pertains to the ability of others to carry out those intentions. Warmth includes traits such as helpfulness, sincerity, friendliness, and trustworthiness, while competence encompasses efficiency, intelligence, conscientiousness, and skill. Kervyn et al. (2012) proposed that the model governing social perception can be adapted and extended to brand perception. Therefore, they developed the Brands as Intentional Agents Framework (BIAF) by modifying the Stereotype Content Model to suit the brand perception context.

Aaker's scale shows similarities with the Stereotype Content Model, particularly in the alignment of the competence factor with competence dimensions and the sincerity factor with the warmth dimension. The ruggedness factor combines low warmth and high competence, a combination that has been associated with stereotypical masculinity (Eagly and Steffen, 1984). The BIAF suggests that brands vary in their perceived intentions and ability to fulfill those intentions. Existing evidence suggests that personality scales akin to Aaker's are well-suited for detailed descriptions of individual brands with a focus on their attributes. Conversely, social perception models, such as the BIAF, offer researchers the possibility of assessing the perception of multiple social objects, facilitating a comprehensive comparative analysis of these objects within a broader landscape. By employing Aaker's (1997) framework, ChatGPT's perception of brand personality can be comprehensively explored in the automotive industry. This framework facilitates an analysis of the extent to which ChatGPT aligns with or deviates from the identified dimensions and their associated scales, thus providing valuable insights into the brand perceptions that may emerge. To achieve this, the methodology incorporates various techniques to uncover the brand personality attributes and explore their implications for effective brand strategies in the digital age.

Methodology. The present study has two separate research objectives. The first objective is to evaluate ChatGPT's perceptions of brand personalities in one specific industry. In detail, it is evaluated if ChatGPT holds well-defined brand perceptions within the automotive industry and how the brand perceptions are formed. Having demonstrated that ChatGPT exhibits brand perceptions, the second objective of the research is to test the perceptions on consumers in

comparison with traditional search engines, in this case, Google search engine. At the current stage of the research, the first part of the research has been completed, while the second part is yet to be conducted.

The selection of the automotive industry is mainly driven by the significant academic interest in branding within this industry. Relevant studies have explored different aspects of branding in the automotive field, for example, research explored brand antecedents in the search for uniqueness (Nikhashemi and Delgado-Ballester, 2022), value and pricing in the consumer brand relationship (Hamzah and Pontes, 2022), brand personality in emerging markets (Ha and Janda, 2014), and the impact of brand reputation and brand personality congruence on brand loyalty (Kuenzel and Halliday, 2010). In addition, the automotive industry invests significant financial resources in brand strategies (Reportlinker, 2022) that are essential to gain a competitive edge in a global oligopolistic market (Carr, 2022). Consumer choice in the automotive industry is also complex and time-consuming because of the high value of the transaction compared to the average annual budget (Heath and Soll, 1996) and the association with high social status (Hannan, 2015). Consumers engage in relevant and complex searches for information when choosing a car and tend to rely upon search engines (Yoo, 2014), and, in the future, may rely on AI-generative search engines, such as ChatGPT.

Specific brands in the automotive industry were selected according to their inclusion in the 100 Best Global Brands 2022 proposed by Interbrand (2022). Interbrand employs a method that evaluates financial performance, brand influence, and consumer loyalty to discern and rank the 100 most valuable brands worldwide (Interbrand, 2023). The list of brands is chosen because it encompasses both luxury and budget brands, as well as brands from a variety of geographic locations offering a comprehensive and diversified representation. A purposive sampling technique was employed to select the sample from the Interbrand list. This sampling approach was regarded as most suitable for the research topic, as it focuses on brand personality impressions in the automobile sector. Fourteen brands from the car industry were extracted from the list. Through purposeful sampling, automobile brands with a high brand presence in the global market were included in this study. The sample size follows the principle of data saturation, "saturation will occur when few or new data are being generated" (Murray, 2010: 16). The sample size was expanded until data saturation was reached (fourteen car brands), ensuring that no new data were being generated (Fusch and Ness, 2015; Langley, 2004; Trotter, 2012).

The research aims to address the following research questions:

RQ1. How does ChatGPT perceive brand personality in the automotive industry?

RQ2. How does ChatGPT categorize existing automotive brands according to Aaker's (1997) framework?

RQ3. How does ChatGPT rate existing automotive brands according to Aaker's (1997) framework?

RQ4: Do consumers perceive brand statements differently when they originate from ChatGPT compared to traditional search engines in the context of automotive brands?

RQ5: How do consumers' perceptions of automotive brands differ when they are exposed to brand statements generated by ChatGPT compared to those from traditional search engines?

The first objective of the research, namely, assessing ChatGPT perceptions of brand personalities in the automotive industry, with the associated three research questions RQ1, RQ2, and RQ3, was achieved through a qualitative method. Indeed, this research employed a semi-structured interview approach, engaging in direct textual inquiries to understand ChatGPT's perceptions of brand personality in the automotive industry. The interviews were conducted remotely on the chatbot platform with all responses carefully recorded and analyzed. The adoption of semi-structured interviews allows for a comprehensive understanding of ChatGPT's perceptions, while also offering adaptability and flexibility during the inquiry process (Kallio et al., 2016). To develop the interview questions, a thematic analysis of the existing literature on brand personality was performed (Thomas and Harden, 2008). The interviews were organized into three parts, each aligned with one of the research questions. The first part sought to grasp ChatGPT's perceptions of brand personality in the automotive industry. The second part focused on how ChatGPT categorizes existing automotive brands according to Aaker's (1997) framework. Lastly, the third part aimed to comprehend how ChatGPT rates existing automotive brands as outlined in the framework.

Thematic analysis, a qualitative research approach facilitating pattern and theme identification within datasets, was employed to extract themes relevant to RQ1 and RQ2 from the collected data. Braun and Clarke's (2006) six-step method of thematic analysis guided this process, involving familiarizing oneself with the data, creating initial codes, identifying themes, evaluating themes, defining and labeling themes, and preparing a report. Thematic analysis is widely recognized in qualitative research (Braun and Clarke, 2006; Levac et al., 2010; Malterud et al., 2016). To address RQ3, ChatGPT was asked to score the brand personalities of the selected brands on a numeric scale for each dimension, following Aaker's (1997) framework. Subsequently, the scores assigned by ChatGPT for each dimension were collated and examined using descriptive statistics to generate a comprehensive data summary.

The second objective of the research, that is, testing the perceptions on consumers in comparison with traditional search engines, with the associated two research questions RQ4 and RQ5, was achieved through a quantitative method. Indeed, consumers will be tested in an experimental design setting. A convenience sample of 90 participants will be selected from students at undergraduate and graduate levels. Undergraduate students primarily be from Business, International Business, and Marketing Majors, while the graduate students will come from MBA and Masters in various business disciplines. Participants will be randomly assigned to two groups. Three separate car brands will be selected, one representing luxurious sporty positioning, one premium positioning, and one reliable and affordable positioning. Three diverse brand positioning are chosen to mitigate potential biases that specific typologies of brands may generate in the consumer's mind (Ariel et al., 2022). For example, consumers can perceive that luxurious brands should employ different brand touchpoints compared to affordable ones. Both groups will be presented to a series of brand statements

from these brands, but the first group will be informed that the brand statements originate from ChatGPT, while the second group will be told that the statements are from Google search engine. After one month, the groups will be reversed, the brand statements will be changed, with the first group now informed that the brand statements come from Google search and the second group from ChatGPT. The statements are changed to prevent confounding effects due to familiarity with the previous exposure (Ariel et al., 2002). After the experiment, participants will undergo in-depth interviews to explore and examine meaningful emerging themes (Denzin & Lincoln, 2005; Iphofen & Tolich, 2018; Toomer et al., 1993; Tracy, 2010).

Results. This section provides a summary of the research findings from the initial phase, while awaiting the results of the second phase.

The first phase of the research revealed valuable insights into how ChatGPT perceives and categorizes automotive brands, shedding light on its evaluation of brand personalities for the selected brands. Additionally, descriptive statistics were employed to analyze ChatGPT's ratings for each dimension within Aaker's framework, providing a comprehensive data summary. The findings contribute to the understanding of brand perception and AI-generated insights in the automotive industry, presenting relevant implications for brand strategies in this competitive market landscape.

Figure 1: ChatGPT's Scoring of Automotive Brands Based on Aaker's Dimensions

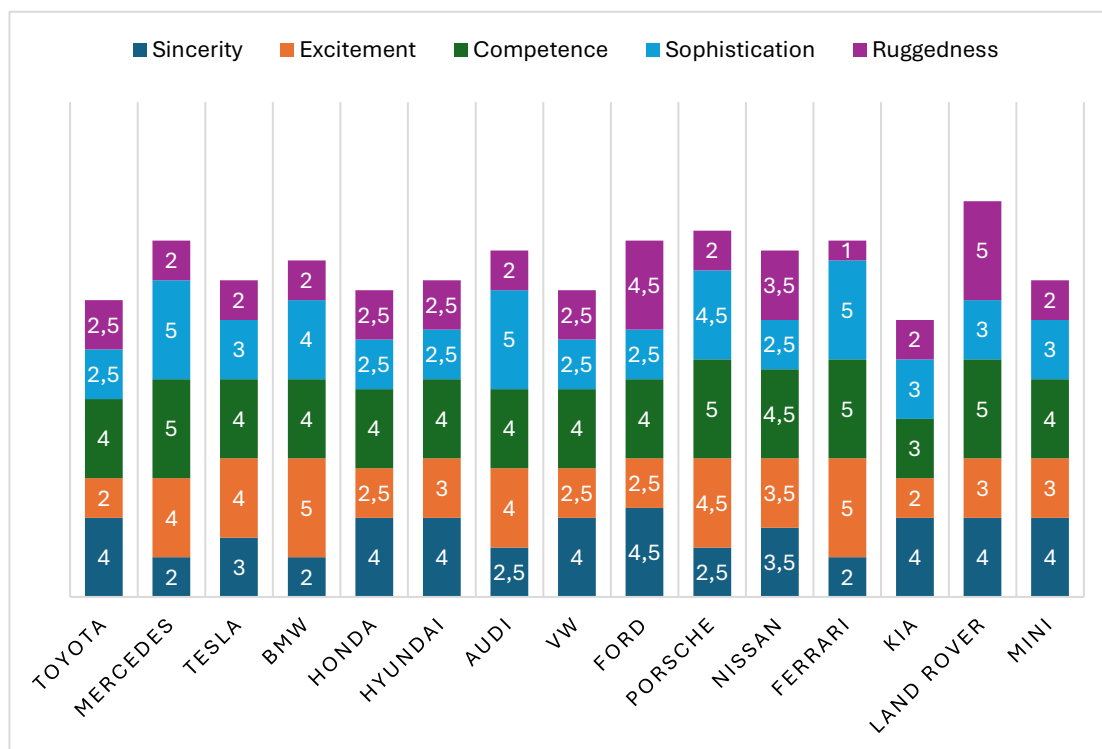


Figure 1 presents a comprehensive summary of the brand personality scores assigned by ChatGPT to fourteen automotive brands, utilizing Aaker's (1997) framework. The results of this study demonstrate clear distinctions among brands according to their distinct degrees of premium positioning and prestige. Luxurious and stylish brands (e.g., Mercedes, BMW, Porsche, Ferrari) are clearly distinguished from the reliable and affordable ones (e.g., Toyota, Honda, Nissan, Ford, Hyundai). Mercedes, BMW, and Audi are designated as exclusive and with sophisticated personality, which confirms the perception that these brands provide superior value propositions. These brands are awarded to this group based on their design and enduring commitment to technology. Yet, Mercedes stands alone in being luxurious, while BMW and Audi uphold a premium perception, but their defining feature revolves around high performance. In a separate premium positioning, Tesla and Land Rover are deemed as exclusive because of entirely different attributes, Tesla prioritizes innovation and environmental sustainability, while Land Rover emphasizes a longstanding tradition of premium SUVs tailored for rugged and adventurous terrains. Iconic sports cars such as Ferrari and Porsche constitute a distinct category as they are linked to a distinct level of social status, with Ferrari being the only brand connected with prestige. Despite Ferrari's notable involvement in Formula 1 and other racing categories, it is not tied to racing heritage, as is in the case of Porsche.

The remaining brands are categorized by ChatGPT as reliable and practical, displaying different levels of brand value attributes. Toyota is the only brand that embodies quality in its branding, similar to more prestigious brands, while Nissan distinguishes itself with stylish design. However, innovation is observed across several car brands despite diverse initiatives in new engine technologies. As an illustration, Toyota has been a pioneer in full hybrid engine technology with its Toyota Prius model. Currently, most Toyota cars feature advanced full hybrid engines, and the brand is making significant strides in hydrogen engine technology. In addition, Nissan introduced its Leaf model early on as a full-electric

product. Nevertheless, Nissan and Toyota are grouped with Ford, which has lagged behind in adopting new engines for its car models. While numerous car brands provide a variety of price ranges for their models, excluding premium brands, only Hyundai, Kia, and Ford are generally perceived as affordable. The term affordability likely refers to value-for-money models, where vehicles come equipped with numerous accessories and additional services and are offered at low or medium prices. Despite providing detailed personality traits for various car brands, ChatGPT showed a notable gap as it did not highlight the primary market segments of these brands. The platform acknowledged that certain brands, such as Ford, were tailored for "everyday use," but it did not focus on the distinct market niches or segments that each brand primarily targets. All the brands classified as reliable, practical, and innovative had no reference to their specific market segments, such as families, commuters, or professionals, for whom these brands design their vehicles. The primary consumers were not explicitly addressed by ChatGPT. This exclusion raises a critical aspect of brand positioning and marketing strategy.

Research limitations. Our study presents several limitations that future research should aim to address. One significant limitation is the methodology applied for the first objective of the research - textual semi-structured interviews coupled with thematic analysis - which was originally designed with human respondents in mind. This approach may not be fully appropriate for analyzing text generated by AI, as it may overlook nuances specific to AI-generated discourse. Therefore, there is a need for methodologies tailored specifically to AI-generated text analysis. Another point to consider is the recent launch of GPT-4, which boasts 500 times more parameters than its predecessor, suggesting potential shifts in AI capabilities that were not accounted for in this study. Additionally, conducting interviews at a single point in time does not account for the AI's evolving learning mechanisms. To gain a deeper understanding of AI-mediated brand evaluation, it would be beneficial to perform analyses at multiple intervals in a longitudinal study. To build on this research, future studies could apply our methodology to GPT-4 to assess any changes in brand personality evaluations within the automotive industry. Finally, future research should consider the perceived intentionality behind ChatGPT's responses, evaluating how the AI addresses commonplace brand-related questions across various industries and regions. This would help clarify the impact of AI on the consumer-brand dynamic and on brand personality as perceived through AI interactions.

Further research should expand the research on consumers and their interaction with ChatGPT. Researchers could explore how consumers connect with the AI platform for branding purposes and understand the most frequent inquiries that they pose. Then, investigating whether consumers use the AI platform during the decision-making process or for post-purchase inquiries and services will contribute to understanding ChatGPT's role in consumer-brand interactions. Future studies can also examine the perceived intentionality of ChatGPT in the context of the human-object relationship by exploring how ChatGPT responds to users' trivial queries about brands in different industries and geographical locations.

Managerial implications. The findings presented in the dataset contribute to the limited academic literature on the newly introduced AI platform and develop valuable insights that brands should consider when managing their online brand personality (Dwivedi et al., 2023; Paul et al., 2023; Teubner et al., 2023; Tsigaris & Teixeira da Silva, 2023). For instance, important themes related to brand personality are completely or partially absent from ChatGPT's outcomes. Themes such as environmentally sustainable strategies, proprietary connections, and extended luxury brands, are not fully considered by the AI platform in its evaluation. Of particular significance is sustainability given the future introduction of new typologies of engines in the market and more restrictive governmental regulations for automotive production. Also, interconnections between umbrella brands and brand extensions are not adequately included in ChatGPT's brand evaluations despite the significant investments in brand development and equity.

Furthermore, this investigation reveals substantial similarities between heterogenous brands, and, even if the scale width is limited, shows potential cases of misalignment between the conveyed and real brand personalities. In addition, ChatGPT has the potential to enhance the brand's personality by providing a personalized and consistent communication experience that reflects the desired traits. Companies should be nonetheless careful to ensure that the platform optimizes the overall customer experience creating no frustration or confusion, and that the conveyed traits are aligned with those of the brand. Recognizing ChatGPT's potential of showing human-like attitudes, such as perceiving and categorizing brands, has significant theoretical and practical implications because it profoundly influences the possible development of the relationship between humans and this AI platform. For instance, this understanding can lead to more effective human-AI conversations by taking into consideration the specific attributes of the individuals involved. Tailoring messages to comply with the psycho-social profile of the recipient (Carfora et al., 2020) can result in a more human-like performance (Kumar et al., 2022). In addition, understanding the mechanisms by which these perceptions are processed can advance theory and practices in consumer psychology and brand management.

Another important factor to consider is the integration of ChatGPT with other touchpoints. ChatGPT can improve the brand's personality by providing a consistent message across different touchpoints. By using ChatGPT in various channels, such as social media, email, and chatbots, brands can establish a cohesive brand voice and tone that reflects the desired personality traits. Consistency in brand communication can improve brand recognition and reinforce the brand's identity in the consumers' minds (Veloutsou, 2023). If the brand communicates its personality through different media, ChatGPT should be an integral part of the strategy and reflect the personality consistently. If ChatGPT is poorly designed or implemented, it can undermine brand perceptions rather than bolster them. ChatGPT's brand perception can also impact the reputation of the brands employing the model for customer interactions. A positive perception of the brand by ChatGPT can improve the brand equity, conversely, negative or misaligned perceptions can jeopardize long-term brand management efforts. As a result, practitioners in the automotive industry should integrate ChatGPT with other

touchpoints to ensure consistency in brand communication and establish a cohesive brand voice and tone that aligns with the desired personality traits.

Moreover, companies should pay attention to the data sources where ChatGPT gathers information on brand personality and should manage them consistently. An inherent risk associated with ChatGPT and its sources is the dissemination of misinformation (Dwivedi et al., 2023; Huh et al., 2023; Paul et al., 2023; Ray, 2023; Teubner et al., 2023). If the data source is inaccurate or misleading, ChatGPT can generate content that perpetuates false information and distorted perceptions. This circumstance can be particularly problematic when the generated text is shared on social media or other media platforms. If ChatGPT conveys a brand personality that is not aligned with the real one, brands can be portrayed through inaccurate and misleading information and consumers can receive responses that diverge from the intentions and communication efforts of the brand managers. As a consequence, brand strategies that include ChatGPT as a relevant touchpoint reduce the probability of misrepresentation by the AI platform.

According to Lemon and Verhoef (2016), touchpoints encompass all the points of contact between a customer and a company, including physical, human, and technological interactions. ChatGPT serves as a technological touchpoint because it offers customers a digital method of interacting with a company. As a touchpoint, ChatGPT has the potential to enhance the customer experience by providing a convenient and efficient means of communication. Customers can use ChatGPT to ask questions, report issues, or receive personalized recommendations without the need for physical visits or human intermediaries. The efficacy of ChatGPT as a touchpoint however depends on ChatGPT's perceptions of the brand. If ChatGPT fails to convey the brand personality accurately, it can create frustration for customers, and jeopardize both the overall customer experience and the brand equity. As a result, practitioners within the automotive industry should ensure ChatGPT's alignment with the real brand personality because inaccurate information can undermine the brand strategy. ChatGPT can enhance the customer experience as a technological touchpoint, however, its efficacy depends on its perception of the brand. In summary, this study elucidates ChatGPT's adeptness at appraising and differentiating brand personalities within the automotive industry, substantiating its analytical prowess against Aaker's established framework. As the automotive industry evolves, this research points to future directions that include adopting AI to convey and reinforce brand personality and exploring consumer interactions with AI platforms like ChatGPT, to fully leverage their potential in shaping and reinforcing brand perceptions in the digital age.

Originality of the paper. The research explores ChatGPT's ability to perceive brand-specific perceptions in the automotive industry. The findings of the research confirm its capability to discern brand personality, categorize brands according to Aaker's framework, and assign corresponding scores to indicators. This makes a significant contribution to the AI-driven branding literature and addresses a gap in understanding the platform's role in brand management. This study offers valuable insights to practitioners in branding strategies. ChatGPT's has the potential to anthropomorphize due to its human-like conversational abilities, impacting brand perceptions. It advocates for aligning ChatGPT's communication with desired brand personalities and maintaining consistency across various touchpoints, such as social media and email, to enhance brand recognition. It underscores the integration of ChatGPT with other touchpoints for a cohesive brand voice to highlight the impact on brand perceptions and equity. Despite ChatGPT's potential to improve customer experience, the study warns against the risk of misinformation from inaccurate data sources, emphasizing the need for consistent data management to prevent misrepresentation. In particular, the findings offer suggestions to the practitioners in the automotive industry, who should constantly monitor the platform and strive to include environmentally sustainable strategies and brand interconnections in ChatGPT's evaluations, which are essential for the evolving automotive landscape. Acknowledging methodological limitations, the study proposes refining analysis methodologies for AI-generated text. It anticipates improvements with ChatGPT4 and calls for future research to examine brand evaluations with the new version, employing a longitudinal approach to understand evolving responses.

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Understanding the potentialities of metaverse for marketers. Insights from Italy

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Abstract

The current study presents an empirical analysis of the metaverse, contributing to the initial literature on this topic. Specifically, the research examines the implications and potential of the metaverse for both consumers and firms by investigating its impact on marketing opportunities. The research aim is achieved through a qualitative analysis. A case study approach was used to explore the practical opportunities related to using the Metaverse servicescape as a marketing enabler. Main results reveal the metaverse as an evolution of technologies (metatech) and the evolution of the experience environment (metascape). It also enriches the existing literature by offering an in-depth qualitative study in a context where scholars have mostly applied conceptual methods. Moreover, it proposes theoretical and practical implications that advance knowledge of the subject and offer ideas for future research and managers.

Key words: Metaverse; Metascape, Metatech; Qualitative analysis; Alterside

Framing of the research. *The rapid development of immersive technologies and metaverse applied to marketing has created new environments where consumers can find novel experiences to learn, enjoy, and escape, and firms may experiment with new ways to communicate their brand and achieve a more qualified audience (Batat, 2024; Ahn et al., 2022). The concept of the metaverse is not new (Stephenson, 1992); however, in the last two years, both academic (Barrera & Shah, 2023; Buhalis et al., 2023; Hajian et al., 2024; Taylor, 2022) and entrepreneurial attention has grown tremendously on this issue.*

From a theoretical point of view, research on the metaverse has intensified in recent months by trying primarily to codify a definition. Despite the general lack of consensus on the precise scope or definition of the metaverse and how it will evolve (Dwivedi et al., 2022), the term “metaverse”, a union of “meta” (beyond) and “verse” (short for “universe”), indicates a three-dimensional virtual world (Park & Kim, 2022): an immersive space within which individuals can move, share and interact through personalized avatars (Cunningham, 2014; Duan et al., 2021). The compound of “meta and “universe” concepts has also been utilized by (Choi & Kim, 2017) who define the metaverse as a space created by merging virtual reality and augmented reality with the real world. Barrera and Shah (2023) define Metaverse “as a technology-mediated network of scalable and potentially interoperable extended reality environments merging the physical and virtual realities to provide experiences characterized by their level of immersiveness, environmental fidelity, and sociability.” This definition of metaverse as a blend of different realities is reinforced by Siyaev and Jo (2021) and Ryskeldiev et al. (2018) who said that with the metaverse physical and digital objects co-exist and interact in live-time through mixed reality and by Buhalis et al. (2023) who specify that convergence of the physical with the digital in the metaverse experience will offer new opportunities to fascinate, involve, and keep consumers.

This study attempts to extend the metaverse management literature by conducting a novel empirical study that considers the metaverse from different perspectives. Firstly, Metaverse is a holistic immersive technology named metatech; Secondly, Metaverse is an experiential space for consumers in terms of a new way to learn, escape, entertain and for companies as a marketing enabler for brand experience, advertising, product placement, named metascape.

The metaverse has the potential to be a marketing enabler by supporting the creation of new forms of sponsorship, organic and paid advertising, product placement, and brand experiences that integrate with those already present in the physical world. Once the potential of the Metaverse as the next big communication channel has been identified, marketers should focus on successfully promoting products and services through it. The Metaverse platforms will present an ever-increasing number of immersive marketing tools designed to target specific demographic audiences as

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it establishes itself as a new 3D channel worthy of integration (Hollensen et al., 2022). Through Metaverse marketing, brands can communicate their brand universe to young consumers in digital spaces, increasing brand desirability and merging the online experience with the offline characteristics of the purchase. This can include physically touching the product to verify its quality, which has been shown to drive willingness to purchase even in augmented environments (Serravalle et al., 2022). However, selecting the right Metaverse platform and developing a marketing communication strategy without causing brand damage can be challenging due to the platform's developmental stage. Therefore, marketers should first identify their marketing objectives for entering the Metaverse and then choose the appropriate platform to promote their brands, products, or services. The goal of this study is to distinguish the concrete differences between the holistic experiences provided by current metaverse platforms, which will aid marketers in their decision-making process and assist scholars in defining their future research. According to Jooyoung Kim (2021), there will be a need to set an agenda for marketers and advertisers when the metaverse becomes massive populated. This is because the advertising models will differ from those of traditional mass media and will be more like the ads in video games. To comprehend the advertising models that will dominate the metaverse, it is crucial to first understand the motivations that drive users to enter it. These reasons are not solely economic, unlike those of advertisers. While the possibility of experiencing a virtual world of events and socializing is attractive to most consumers, the primary motivation remains the enjoyment of gaming. Numerous companies have recently entered the Metaverse as advertisers, including Nike and Disney. Their goal is to maintain a presence in the virtual world of consumers' 'second live'. These companies are aligning their marketing and communication strategies with the characteristics of the metaverse. They are creating immersive brand experiences that promote their ideas and values, while fostering a sense of community that transcends boundaries.

Purpose of the paper. We contribute to extant research by proposing an empirical study in an area where academics have mainly used theoretical approaches by providing a meaning of the metaverse and its current forms of use, as well as defining the trajectories that will characterize consumer experiences in the coming years. The results bring to light a metaverse that represents a "third dimension" where innovative technologies coexist, where the real merges with the virtual in the so-called "second life" and this produces interesting implications for companies and marketers. From a theoretical perspective, this study contributes to the marketing and management literature by integrating the characteristics of new technologies offered by the metaverse with the opportunities for marketing with empirical evidence which adds novelty to our research because literature can be compared with the point of view of entrepreneurs and experts. Managerial implications emerge that support the managers who want to understand what the development trajectories are and consequently how to take advantage of the metaverse's opportunities. This research extends the embryonic literature on metaverse by applying a two-step analysis, by revealing how the holistic technologies within the metaverse may create new opportunities for marketing.

Methodology. To provide a clear definition of the metaverse from a practical perspective, this study follows an empirical-based approach that excludes subjective evaluations and aims to understand the marketing opportunities related to the usage of these immersive platforms by conducting an in-depth qualitative analysis. Several semi-structured interviews were conducted with the first Italian marketing agency in the metaverse named 'Alterside'.

To achieve our research aim, we use the case study method as a research approach (Eisenhardt, 2020; Rashid et al., 2019) to understand the meaning of the metaverse and how it will change the paradigms of the consumer experience and the advertising opportunities for companies. Regarding the choice of the case, we respected the criteria of the research purpose.

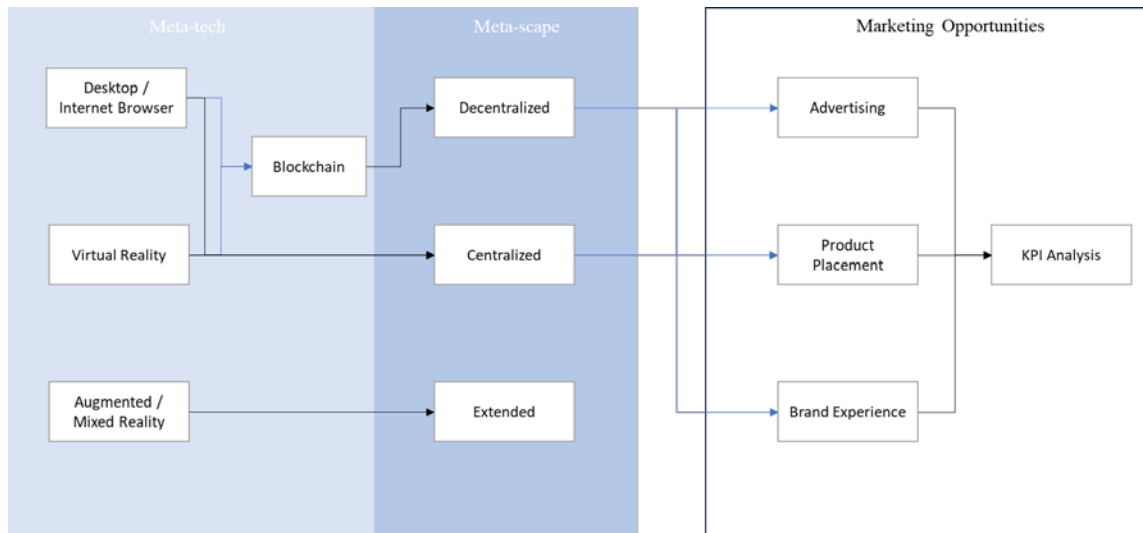
Alterside is a marketing agency specializing in creating Virtual Reality, Augmented Reality and NFT experiences, services and content within the metaverse. The case study method is convenient when the form of the research question is "How?" (Yin, 2009). Because of the peculiarity of the case and the absence of a pre-existing theoretical framework, an exploratory research design was structured (Meredith, 1998; Yin, 2013); furthermore, we do not create propositions and hypotheses (Mills et al., 2009). The exploratory nature of case studies can also reveal new facets of the phenomenon under analysis (Dubois & Gadde, 2014; Eisenhardt & Graebner, 2007).

Through a qualitative research approach based on primary and secondary data, we used multiple sources of evidence for the triangulation of data (Yin, 2009), and we organized the case study analysis into two phases. We collected information from personal interviews and online documentation such as reports, statistical data, and specialized press articles. As a primary source of data, we conducted 10 interviews with the various actors involved in the company Alterside. Through a semi-structured questionnaire, we requested information on the main Alterside actors (the founder, the key account manager, the marketing manager, and the different project managers). The personal interviews comprised open-ended questions to collect the perceptions about the definition and meaning of metaverse and the current and future opportunities for advertisers. Each conversation typically took 60 minutes. All interviews were audio-recorded, transcribed verbatim to facilitate the analysis, and anonymized. As secondary sources, several media publications, and official reports from January 2023 to December 2023 were also analyzed to understand the state of the art of the metaverse. The analysis practiced an iterative and inductive approach. Inductive theory based on qualitative data is appropriate in an understudied empirical environment in which there is relatively little prior work (Bansal et al., 2018). The multiple data elements furnish a stronger demonstration and consistency of the key objectives of the case study. Although multiple sources of evidence (e.g., personal interviews and online documentation) are different and independent, their combination can be fundamental to scholars as complementary perspectives of the phenomenon may be produced. Therefore, personal interviews, official company data, media publications and other evidence were triangulated and analysed through a thematic analysis (Braun and Clarke, 2006).

Results. *In this paper, we try to enrich the marketing literature by talking about the metaverse, the metaverse has been framed as a new holistic consumption space where all the most innovative technologies (e.g. NFT, VR, AR, blockchain, cryptocurrencies) able to coexist to create a third dimension that adds to the physical and digital one.*

Indeed, the first interesting thing that emerged from our study is the holistic dimension of the metaverse, that brings all the emerging technologies together (AR and VR, NFT, blockchain, cryptocurrencies) to create what happens in reality in a virtual way. This phenomenon has been called the third dimension that will not replace the physical or digital life that you already live, but will add to it, creating more effectively usable opportunities in the metaverse and others more appropriate for real or digital life. According to Alterside, the metaverse is a new environment where some existing technologies coexist creating a new dimension of fruition, in addition to the offline and online one, the experience of a virtual second life.

Fig. 1 – The opportunities of metaverse for marketers



In this paper, the metaverse has been framed as a new holistic consumption space where all the most innovative technologies (e.g. NFT, VR, AR, blockchain, cryptocurrencies) able to coexist to create a third dimension that adds to the physical and digital one.

Indeed, the first interesting thing that emerged from our study is the holistic dimension of the metaverse, that brings all the emerging technologies together (AR and VR, NFT, blockchain, cryptocurrencies) to create what happens in reality in a virtual way. This phenomenon has been called third dimension that will not replace the physical or digital life that you already live, but will add to it, creating more effectively usable opportunities in the metaverse and others more appropriate for real or digital life.

As emerged from the results, going to the metaverse to buy a dress does not exclude that I will go shopping in stores, nor will I no longer go on e-commerce, the third dimension is halfway between the two. So, if today we are unconsciously used to living in these two dimensions online and offline, tomorrow we will live in three dimensions online and offline and in a hybrid one in between, which should unite what we do offline and what we do online, giving us a third way of interacting.

An interesting, emerged result is related to the opportunities for advertisers. Indeed, what we imagine today is that advertising in the metaverse will be much more like what we experience offline today. The difference is that advertising in physical space has limits. As an entrepreneur interviewed explained to us, you can put a billboard on the wall of a building and it ends up there, in the metaverse, however, you can put a billboard that changes according to the user who looks at it. The interesting thing is that in the metaverse a billboard becomes interactive, if there is a call to action, the avatar can touch it and continue the experience elsewhere, in another environment, for example, directly in a shop. Product placement will be used a lot as a form of advertising and the innovation will be that the user will be able to buy both the digital version of the avatar (the so-called digital twin) and the real one that arrives at home with the courier of that product and businesses they can measure the returns of that advertising because the behaviors are tracked by the data. This means that the metaverse opens a series of new opportunities for companies, still a bit skeptical today and waiting for the metaverse to become accessible. In fact, what will make these practices more concrete will be the diffusion of the metaverse experience among consumers and this will only happen when viewers spread in an accessible way.

Research limitations. *The paper contributes to the literature on the metaverse with an empirical exploration of the meaning and opportunities, by using a qualitative approach. Our study is a first attempt to explore the current state-of-art about the metaverse and for identifying some key aspects of its future implementation. Although this paper represents an important informative contribution for companies and academics, it should be emphasized that it is defocused on specific aspects that will certainly be the subject of a second research step.*

Future research may be conducted by interviewing firms that have already experienced service in the metaverse and, on the other hand, it could be also important to capture the consumers perceptions on the metaverse.

Managerial implications. Managerial implications emerge that support the managers who want to understand what the metaverse is and what the development trajectories are and consequently how to take advantage of the metaverse's opportunities. Our study has practical and academic implications in the field of technology applied to marketing. Our qualitative investigation incorporates both customer and company perspectives, thus increasing the understanding of the subject and providing meaningful contributions for marketers who want to investigate the mechanism of promotional strategies with reality-enhancing technologies (Hilken et al., 2022). From the firm's point of view, the identification of the meaning and the future development of the metaverse within a marketing strategy should be useful. The third dimension offered by the metaverse allows understanding that they will not replace the current marketing activities but rather it will represent an extra option where place the most appropriate brand experiences. The element of second life, from a marketing point of view, offers opportunities to recreate everything that exists in real life, in virtual, thus increasing sales opportunities for the so-called digital twin. Finally, the surprising finding that metaverse may perceive and keep the biometric data has important practical implications.

First, it makes it possible to monitor marketing actions also through perceived data, which is the most important in consumer purchasing behaviour. Furthermore, it gives the possibility of profiling consumers based on biometric variables and making advertising even less invasive than it is now in the two-dimensional internet.

Originality of the paper. We contribute to extant research by proposing an empirical study in an area where academics have mainly used theoretical approaches by providing a meaning of the metaverse and its current forms of use, as well as defining the trajectories that will characterize consumer experiences in the coming years. The results bring to light a metaverse that represents a "third dimension" where innovative technologies coexist, where the real merges with the virtual in the so-called "second life" and this produces interesting implications for companies, and marketers.

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“The influence of individual values on purchase intention of fair-trade products: An analysis on Italian consumers”

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Abstract

This paper examines how individual values influence the purchase intentions of fair-trade products among Italian consumers. Fair-trade initiatives promote fair and sustainable practices, aiming to empower marginalized communities.

By focusing on consumers' individual values, this research seeks to uncover the underlying motivations driving fair-trade purchasing decisions. A survey-based methodology will be employed to explore consumers' values and the impact of values on fair-trade purchase intentions. Consumers' values will be investigated using the Schwartz value theory (1992).

Data will be collected using an online survey submitted to Italian consumers. The survey will be developed from sources already used and validated in the literature. An exploratory factor analysis (EFA) will be performed on the ten Schwartz metavalues measured using the portrait values questionnaire (PVQ) method. Also, a confirmatory factor analysis (CFA) will be performed to assess the psychometric properties of the scales. Finally, multiple regressions will be carried out to determine if there are significant associations between specific cultural values and the intention to buy fair-trade products. Research is ongoing, but early results suggest a positive effect between some individual values of (SVT) and intention to purchase fair-trade products, with implications for marketing strategies and policy making. The originality of this paper lies in its focus on Italian consumers and their individual values, contributing to a deeper understanding of fair-trade consumption patterns and promoting ethical and sustainable consumer behavior in the Italian market.

Keywords: *Schwartz value theory; individual value, fair-trade product; purchase intention; ethics of consumption*

Framing of the research. *The tension connected to globalization and the focus on profitability and efficiency have limited the development of fair-trade between manufacturers and retailers (Fiedoruk, 2021), and small-scale producers and labourers frequently struggle to strengthen their negotiating position in both local and international markets (Ncube, 2020). Fair-trade organisations (FTOs) promote different business relationships with farmers and craftsmen in developing countries and rural regions that frequently experience social and economic marginalization to alleviate this gap (Krier, 2006). These collaborations emphasize sustainable environmental practices, safe working conditions, and fair compensation to empower underprivileged communities and promote fair-trade practices. Therefore, creating sustainable and people-centred business models is the main goal of fair-trade (FT) practices (Bhavsar et al., 2021). Hence, fair-trade could be considered as an alternative to international conventional trade. It is a kind of trading partnership that promotes marginalized or disadvantaged producers through sustainable development (Śliwińska, 2023).*

The promotion of fair trade chains becomes even more critical when considering policymakers' global social and environmental sustainability goals. In particular, delving deeper into issues related to fair-trade products could help achieve some of the goals outlined in the 2030 agenda concerning the 17 Sustainable Development Goals (SDGs) defined by the United Nations. Specifically, these goals include points 1 (No poverty), 8 (Decent work and economic growth), and 16 (Peace, justice, and strong institutions).

From this standpoint, fair-trade provides consumers with a variety of products that adhere to elevated social and ecological criteria (Sellare et al., 2020), aligning with the increasing consumers' awareness of the environmental and social impacts of their purchasing decisions. The consumer's desire to address social injustices and inequality while aiding firms in their “transition away” from the conventional, unsustainable economic model is reflected in this tendency (White et al., 2019; Ethical Consumer, 2021). Based on these considerations, understanding and analyzing the factors that most influence consumers' purchase intentions of fair-trade products can be important for fair-trade firms, NGOs

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and retailers involved in the fair-trade to attract more customers and improve this business with a positive impact on local farmers and artisans.

Several scholars conducted over the last 20 years have examined the variables that affect customers' decisions to buy fair-trade goods (Chatzidakis et al., 2016; Beldad & Hegner, 2018). Customers' inclinations to buy fair-trade products are significantly influenced by their views on these products, societal norms, and moral obligations (Robichaud & Yu, 2021). Moreover, several research investigations highlighted that individuals with heightened environmental awareness tend to prefer purchasing fair-trade and environmentally sustainable products. (Haj-Salem et al., 2022; Kirmani et al., 2022). Furthermore, attitudes are widely acknowledged in the literature on social marketing and cognitive psychology as having a substantial role in determining customers' altruistic and ethical behavior (White et al., 2019). Indeed, several studies examining fair-trade purchasing have found a clear association between consumers' opinions toward fair-trade and their inclination to purchase fair-trade goods (Kossmann & Gomez-Suarez, 2019; Pinna, 2020; Robichaud & Yu, 2021; Shaw & Shiu, 2002; Wang & Chou, 2020). However, these studies didn't consider that individual values strongly impact the attitude and the intention to buy (Rohan, 2000). Previous research has shown that values significantly impact beliefs and attitudes, typically influencing intentions to act in specific ways (Grankvist et al., 2007; Joireman and Duell, 2007). According to Rokeach (1973, p.5), individual values are "enduring beliefs that a specific mode of conduct or end-state of existence is personally or socially preferable to opposite or converse modes of conduct or end-state". Hence, values represent an individual's fundamental principles or overarching beliefs that lead their actions, judgments, and decisions (Rokeach, 1973; Williams, 1979). They encompass directional, cognitive, and affective dimensions, serving as criteria for evaluating behaviors and events (Williams, 1979). However, it's crucial to understand how each individual's values differ in nature and importance (Grankvist et al., 2007). Schwartz (1992) already assumed that individuals have a set of values that shape their lives and establish their preference patterns. According to Schwartz (1992), 56 value elements correspond to ten distinct metavalues: achievement, power, hedonism, self-direction, stimulation, security, conformity, tradition, benevolence, and universalism. These ten metavalues are arranged in a circular pattern consistent with the Schwartz value theory (1992), where values that correlate positively are closer or next to one another, while values that correlate negatively are farther away or opposite. According to Jimenez et al. (2020), the most often used value scale in contemporary human/individual values research is the Schwartz Value Theory (SVT).

By identifying the wants and desires of customers, an understanding of their values may improve the effectiveness of marketing. A multitude of nations, including Belgium, the US, Sweden, Greece, the UK, and Spain, have carried out substantial studies on personal values and socially conscious consumption (Steenhaut and Kenhove, 2006; Grankvist et al., 2007; Krystallis et al., 2008; Pepper et al., 2009). In Italy, there is a lack of studies considering the individual values' impact on fair-trade purchasing intention. Thus, it could be fascinating to understand how the individual values of Italian consumers impact their decision to purchase fair-trade products.

Purpose of the paper. The research aims to delve into the individual values of Italian consumers and how these values influence their decision-making process when purchasing fair-trade products. This investigation arises within the framework of fair-trade principles, emphasizing equitable treatment, fair compensation, safe working conditions, and environmental sustainability.

This study addresses a gap in the existing literature by narrowing its focus to Italian consumers and their value systems. Focusing on Italian consumers, the research aims to provide insights into the unique factors driving their intention to buy fair-trade. Thus, through an in-depth analysis of Italian consumers' values, attitudes, and behaviors, this research aims to uncover the underlying motivations behind their fair-trade purchasing decisions. Specifically, it will explore how individual values shape consumers' preferences and actions in the fair-trade marketplace. Accordingly, the research question of this work is:

RQ. How do individual values influence the purchase intentions of fair-trade products among Italian consumers?

Methodology. To fulfill the aim of this study and address the research question posed, a survey will be conducted. The survey will be developed from sources already used and validated in the literature (Tobón & Luna-Nemecio, 2021). The advantage of relying on already validated sources increases the possibility of obtaining a reliable and valid questionnaire (Sürücü & Maslakçı, 2020).

The survey will be divided into three sections. The first section will measure the ten individual values defined by Schwartz's model to determine how relevant each value is to respondents. To carry out this measurement, the 21-item PVQ of Schwartz will be used. This tool is widely used and accepted in the literature to predict the attitudes and behaviors of individuals (Jimenez et al., 2020). The importance of the values will be rated on a Likert scale between 1 and 7. One indicates "not at all like me", and seven indicates "very similar to me".

The second section will collect data about the purchase intention of fair-trade products. The first part of this section will provide respondents with a brief definition of these products. In particular, a fair-trade business relationship is one in which employees receive a fair salary, labor is performed in hygienic and safe circumstances, and environmental protection is prioritized. (Binion, 2020). Haj-Salem et al.' adapted scale (2022) will be used to measure intention to purchase fair-trade products, while items evaluating attitudes about fair-trade products will be produced based on Zerbini et al. (2019). Using a seven-point Likert-type scale, (1) = strongly disagree and (7) = strongly agree, these scales will be tested. Finally, in the third section, demographic and socioeconomic information such as age, gender, education, occupation, and income level will be collected.

The two-step data analysis method proposed by Anderson and Gerbing (1988) will be used. To determine the personal values (meta-values), an exploratory factor analysis (EFA) will be conducted in the first stage on the ten Schwartz values derived from the answers to the portrait values questionnaire (PVQ); in the second stage, a confirmatory factor analysis

(CFA) will be conducted to evaluate the psychometric qualities of the scales. Lastly, multiple regression analysis will be performed to ascertain the connections between certain cultural values and the intention to buy fair-trade goods.

Additionally, respondents will be advised that all of their answers are anonymous and confidential, and they are urged to provide as truthful an answer as possible. We'll send emails and post links to the poll on social media. This strategy may assist in guaranteeing respondents' anonymity and lowering social disability prejudice based on a convenience sample (Ming et al., 2021).

Expected Results. Understanding in depth how Schwartz's values may help understanding how consumers develop their purchase intention, and what are the factors that organizations can use to facilitate the emergence of the intention and the translation of the intention into action. The use of fair-trade products is important in a world where attention to the environment, sustainability, and the well-being of individuals has become crucial in addressing current global challenges. In the context of growing environmental and social awareness, consumers are increasingly taking an active role in reducing the environmental impact of their consumption choices and supporting ethical business practices (Busalim et al., 2022). As identified by Schwartz's value theory, individual values guide people's preferences, decisions, and behaviors in various contexts, including consumption. These values reflect an individual's fundamental beliefs about what is essential in life and influence perceptions of the world and actions taken (Schwartz & Bilsky, 1990).

As observed by other scholars in contexts related to the purchase of green, sustainable products and taking into account the conditions of workers, it is expected to observe a positive correlation between specific individual values of participants and their propensity to purchase fair-trade goods (Haj-Salem, 2024; Shaver & Yan, 2022; Li et al., 2021). Consumers who give more importance to ethical and social values, such as equality, benevolence, and universalism, may be more inclined toward issues related to social justice and environmental sustainability (Sarid & Goldman, 2021). This inclination should drive individuals toward purchasing products that adhere to these principles. Furthermore, it is expected that consumers who find an alignment between their values and the fair-trade products principles will be more likely to use them, even if the price is higher (Musa & Gopalakrishna, 2021). On the other hand, it is also expected to encounter notable variations between demographic categories and individual values' influence on consumer intentions. For instance, purchasing habits may differ based on age, income, education, and cultural background.

Higher-educated people or those from more environmentally conscious cultural origins may indicate a greater inclination to buy fair-trade goods than people from other backgrounds (Berki-Kiss & Menrad, 2022).

Since the degree of knowledge and instruction about sustainability and fairness themes strongly impact how individual beliefs affect consumer behaviors (Hosta & Zabkar, 2021), a better-informed customer about fair-trade and production concerns may be more inclined to act responsibly while purchasing.

However, discrepancies between expressed values and customers' purchase patterns may arise, among other outcomes. For instance, a customer may claim to support social justice and the environment, but at the moment of purchase, they may be swayed by other considerations like availability or price. This could cause a distance between expressed intentions and practical actions.

Finally, this research will deeply understand how consumers' individual beliefs impact their attitudes and intentions to buy fair-trade products.

Research limitations. Despite the interesting possible results of the study regarding the relationship between individual values and intention to buy and purchase fair-trade products, it could still suffer from several limitations. First, the survey may not have a representative sample of the Italian population, which could influence the results. Also, undermining the validity of the work could be responses provided by participants influenced by many factors, such as a desire to provide socially acceptable answers or a lack of awareness of their cultural values. Consider also that the study will adopt a cross-sectional perspective and not a longitudinal perspective so data will be collected at a given time. Furthermore, the results obtained will be specific to the Italian context and may not be generalizable to other populations or cultural contexts, limiting the applicability of the research findings. For these reasons, future studies should consider these limitations and possibly increase the reference sample and replicate the analysis in other countries to improve the generalizability of the results.

Managerial implications. Understanding the impact of consumers' individual values on the intention to buy fair-trade products and the purchase of these products could be helpful to several subjects. A comprehensive analysis of the correlation between individual cultural values and inclinations towards fair-trade products may shed lights on the factors affecting consumers' intentions and help promoting products in the most effective way. This knowledge can increase the significance of multicultural marketing tactics, which mostly consider country or collective culture, with the weak assumption of a diirect influence of it on consumers' individual choices and behaviors. Researchers can forecast people's attitudes and behavior by identifying the values that are significant to them (Kamakura and Novak, 1992). This knowledge could be particularly useful in the fair-trade business, as marketers may achieve a competitive edge by offering fair-trade products (Strong, 1997). These findings' practical uses would be in marketing campaigns, as companies are better able to spark interest in their goods when they are aware of the values of their customers (Durgee et al., 1996). Since customers use values to guide their purchasing decisions, marketers should use this knowledge to shape their communications better (Allen, 2001; Blackwell et al., 2001). Therefore, by understanding the impact of individual values on fair-trade purchase intention, marketers can customize their messaging and positioning better to align with these values.

The study's results can also guide product development efforts within fair-trade organizations. Understanding what values are most important to consumers can help develop new fair-trade products that align with these values. For

example, consider environmental sustainability critical to fair-trade consumers' purchase intentions. In that case, organizations can focus on developing environmentally friendly packaging or expanding the range of environmentally sustainable products. Moreover, there are important implications also for NGOs engaged in fair-trade programs. These organizations can improve their outreach and advocacy activities by utilizing the knowledge gathered from this research. Thus, NGOs can effectively communicate the social and environmental benefits of fair-trade practices by customizing their communication tactics based on an understanding of the specific values that influence the purchasing intentions of Italian consumers toward fair-trade products.

On the other hand, this study could be helpful for policymakers. Examining cultural values and fair-trade purchase trends may help policymakers shape initiatives to highlight the importance of buying these products.

Governments may play a critical role in encouraging ethical consumerism through subsidies, tax incentives, or regulatory frameworks encouraging fair-trade practices and environmental sustainability.

Moreover, governments may foster an environment that encourages firms to adopt responsible practices and empowers consumers to make conscious decisions by coordinating legislative objectives with cultural values and consumer preferences. To sum up, a comprehensive examination of individual cultural values and fair-trade consumption may educate various stakeholders, such as governments, corporations, and marketers.

Originality of the paper. The originality of this paper lies in its focus on understanding how individual values influence the purchase intentions of fair-trade products among Italian consumers. While previous research has extensively explored factors influencing fair-trade consumption, such as attitudes, societal norms, and environmental awareness, few studies have considered the effects of individual values on consumer behavior in the fair-trade context (Robichaud & Yu, 2021; Zerbini et al., 2019; O'Connor et al., 2017). Although environmental awareness has been identified as a significant factor driving fair-trade consumption, the influence of individual values, such as personal beliefs and overarching principles, has been largely overlooked (Haj-Salem et al., 2022; Kirmani et al., 2022; Konuk, 2019). By focusing on individual values, this paper aims to fill a gap in the existing literature and provide insights into the underlying motivations behind Italian consumers' fair-trade purchasing decisions. It recognizes the importance of understanding consumer values in enhancing marketing efficacy and tailoring strategies to meet consumer needs and desires (Shaw et al., 2005; Grankvist et al., 2007).

Furthermore, even while studies on personal values and socially conscious consumption have been carried out in several nations, in Italy there is a lack of studies that intensely focus on the individual values' impact on the intention of purchasing FT products. Therefore, this paper offers a novel perspective by exploring how Italian consumers' individual values impact their fair-trade purchasing behavior, contributing to a deeper understanding of fair-trade consumption patterns within the Italian context. In conclusion, this study aims to fill this research gap and offer insightful results that might improve customized marketing plans and encourage moral and sustainable consumer behavior in the Italian market.

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The story that only circular products can tell: Empowering consumers through background information

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Abstract

Used clothes have a story to tell, carrying with them the essence of their previous lives. Whether second-hand or remanufactured, clothes passed down from someone else entail something special, embodying not just a product, but a narrative. Literature suggests the need for more value-based studies on consumer behavior, such as satisfaction and perceived quality, especially in the post-purchase stage of circular economy products. One less-explored value-based attribute is the concept of provenance, where the impact of the prior owner of an item remains largely unexplored. Hence, the primary objective of this study is to analyze the impact of provenance effect on consumers' purchase intentions, focusing on its inherent value in used clothing, such as remanufactured or second-hand products. To study these effects, two between-subject experiments were conducted in consecutive years. The first part looked at how product circularity and provenance interact with the presence of blockchain technology. The second part, inspired by the initial findings, focused solely on the relationship between product circularity and the provenance effect. Our analysis from both studies offers insights into consumer purchase intentions and how they perceive the value of circular products. Through the insights gained, this study aims to provide guidance for developing a new strategy to enhance the longevity and circularity of used products in the market.

Keywords: *circular economy; sustainable consumption; fast fashion; provenance effect; consumer purchase intention; second-hand products*

Framing of the research. *Over the years, there has been a growing focus on the Circular Economy as a solution to replace the linear consumption model. However, with each market advancement comes new challenges. Despite progress in technology and economic production, consumption rates have paradoxically increased, particularly evident in the fast fashion phenomenon, doubling the industry's size in the past decade. Various solutions have been proposed, but more consumer focused strategies are needed to achieve sustainability goals. This study addresses the need for value-based solutions to enhance circularity, especially on the consumer side. It ventures into the heart of the circular economy, pivoting from the traditional emphasis on technical qualities such as material composition and product durability (Machado et al., 2019; Testa et al., 2021) to explore the profound, intangible aspects imbued within circular goods. Highlighting the unique value propositions that Kirchherr, Reike, & Hekkert (2017) noted, it investigates the environmental benefits, the influence of brand image (Kim & Jang, 2016), the power of product history, and the innovative transparency offered by blockchain technology (Morkunas et al., 2019). Through recognizing the regenerative nature of circular products, the study delves into how various elements—including brand recognition, perceived uniqueness (Tian et al., 2001; Franke & Schreier, 2008), meaningfulness (Im et al., 2013), and the stories of previous ownership—inform consumer preferences and purchase intentions. Drawing on insights from Confente, Scarpi, & Russo (2020) and Magnier, Mugge, & Schoormans (2019), it seeks to elucidate the complex motivations that draw consumers towards circular products, proposing hypotheses on the profound impacts of product type (remanufactured vs. second-hand) and the depth of information available on consumer perceptions and intentions.*

Purpose of the paper. *The primary objective of this study is to transcend the conventional linear model of consumption and facilitate the transition towards circularity within the fast-growing market. While extant research predominantly delves into the production facet to promote circularity, it's time to spin the wheel towards exploring the consumption side of the cycle. Recognizing consumers as pivotal actors, we have undertaken to delve into the multifaceted motivations underpinning consumption decisions of emotion-valuing primates. The subsequent paragraphs delineate and explains the chosen parameters of this study, contextualized within existing relevant scholarly discourse.*

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Beyond technical aspects of circular products

The circular economy promotes the principles of reducing, reusing, recycling, and recovering materials in both production and consumption processes to minimize environmental harm (Kirchherr, Reike, & Hekkert, 2017). In essence, the regenerative approach of the circular economy posits that items that are repurposed or recycled offer unique value propositions to consumers. While some studies have delved into what drives consumer interest in such products (Confente, Scarpi, & Russo, 2020; Magnier, Mugge, & Schoormans, 2019; Testa, Gusmerotti, Corsini, & Bartoletti, 2022), the focus has predominantly been on their perceived technical qualities, including the composition of materials, perceived quality, and attractiveness (Machado, Almeida, Bollick, & Bragagnolo, 2019; Testa, Di Iorio, Cerri, & Pretner, 2021). For example, recent findings suggest that while consumers highly value and are inclined to buy second-hand items made from recycled plastics, concerns about plastic reduce the perceived value of these products (Testa et al., 2022). There is an ongoing interest in researching second-hand products, particularly those of well-known brands (De Angelis et al., 2017; Testa et al., 2022), as a brand embodies the beliefs and perceptions that significantly influence consumer behavior (Kim & Jang, 2016). Specifically, a favorable brand image can motivate consumers to prefer its products or services over those of competitors, even if the products are constructed from recycled materials (Testa et al., 2022). However, the effect on final purchasing decision of products entailing different types of regenerative approaches is yet to be assessed.

H1: The type of circular product (remanufactured vs. second-hand) has a significant positive effect on consumers' purchase intention.

Uniqueness, meaningfulness, and purchase intention of circular products: uncharted waters

The decision-making process of consumers is swayed by deeper, non-tangible elements such as uniqueness and meaningfulness. Recognizing their role in shaping purchase intentions can enable companies to fine-tune their marketing approaches and product line-ups. Uniqueness pertains to how a product or service stands out; it is defined as "the extent to which a consumer perceives a product as being distinct from others in the same category" (Tian et al. 2001, p.95). Studies on perceived uniqueness in tailor-made products suggest that beyond just aesthetic and functional suitability, perceived uniqueness adds distinctly to the utility experienced by customers, particularly for those seeking a sense of uniqueness (Franke & Schreier, 2008). Additionally, Hagtvæd and Patrick (2008) demonstrated that products perceived as unique could elevate their perceived value and spur greater purchase intent. Their findings indicated that between two options, consumers showed a preference for the unique item over the commonplace one, even at a higher cost, underscoring uniqueness as a potent strategy for product differentiation and enhancing purchase intentions.

Meaningfulness, on the other hand, relates to how personally significant or relevant a product feels to a consumer in terms of its suitability and utility (Im et al., 2013). Research into meaningfulness suggests that creating distinction through meaningfulness leads to higher customer satisfaction, as products that are more meaningful more effectively meet consumers' needs and expectations (Im and Workman, 2004; Kim et al., 2013). Further studies into the role of consumption-supportive packaging functionality indicate that perceived product meaningfulness is a key factor in understanding its positive influence on purchase intention (Im et al., 2013). Therefore, products that strike a chord of both uniqueness and meaningfulness with consumers are seen as more valuable and fulfilling, increasing the likelihood of purchase. Yet, the academic community has not extensively explored these aspects in the context of circular products, including both second-hand and remanufactured items.

H2: The type of circular product (remanufactured vs. second-hand) has a significant positive effect on meaningfulness and uniqueness.

Leveraging blockchain technology to securing product's information

Conveying information to the final consumer is a delicate endeavor. Akin to a drug prescription, its effectiveness largely depends on providing the right amount of information and trust towards such information. Regarding the former aspect, literature is adamant in highlighting the risk of information overload (Gross, 2014; Hu and Krishen, 2019). On the other hand, trust is much more subtle and challenging to convey effectively, as much as requiring third-party, independent certifications (Testa et al., 2020). Especially when dealing with sustainable, circular products, the risk of greenwashing looms on the horizon (Garrido et al., 2020). Therefore, companies strive to catch up with the latest technology to show accountable information. Blockchain technology (BT) serves this purpose admirably. Specifically, high-end companies, whose products' value comes primarily from the unseen—such as the quality of the materials involved, the craftsmanship, etc.—are secured and then provided through a specific product ID (Morkunas et al., 2019). An example of this is how LVMH, Prada, and Cartier (part of Richemont) have collaborated to create the Aura Blockchain Consortium, a global luxury blockchain initiative designed to enhance transparency and traceability for luxury items. This platform matches product IDs with client IDs, allowing consumers to access a product's history and proof of authenticity at every step of its lifecycle. Brands like Hublot, Bvlgari, and Louis Vuitton are already active on Aura, each developing unique experiences tailored to their products and customer expectations, while ensuring the highest standards of data privacy and security (LVMH, 2021). Nonetheless, background information might be relevant even when purchasing second-hand or remanufactured products (Kessous et al., 2019). Specifically, its benefits are twofold: pragmatic and emotional. The former refers to concerns over scams, so it can mitigate scams and connect the past and next owner in a sort of intelligible human bond, the value of which, though, remains largely unexplored.

H3a: The encryption of owner information using blockchain technology can affect the perceived meaningfulness and uniqueness of circular clothing.

H3b: The encryption of owner information using blockchain technology can have a significant positive effect on consumers' purchase intention.

Uncovering the hidden value of used products

It is somewhat unexpected that research has yet to delve into a unique characteristic of handcrafted items that are neither remade nor recycled: the history of their previous ownership. Apart from technical attributes, there's a compelling case to be made that a product's backstory—its provenance—might influence its perceived worth. The significance of provenance is well-acknowledged in the realm of antiques and artwork purchases, as outlined by Feigenbaum and others (2012). Typically, such items accrue value through their historical lineage and the narratives of their past owners. Yet, the impact of provenance on more everyday consumer goods remains ambiguous. Conventional wisdom often posits that resale items depreciate in value. However, preliminary findings suggest that even ordinary products can appreciate in value, as observed in studies of the secondary sneaker market (Slaton & Pookulangara, 2022). This inconsistency within scholarly discussions warrants further exploration. We posit that an underappreciated aspect lending significance to remanufactured goods is the story of their origin—essentially, the narrative of provenance they carry. Storytelling is a fundamental human experience that adds perceived value to objects. Thus, we investigate the intrinsic value circular products may hold, focusing on items with a history of previous ownership, including both second-hand and remanufactured goods. These items have been part of someone else's life—worn, experienced, and imbued with personal memories. In essence, they bear a connection that extends beyond the physical, crafting a personal narrative. Our research then is dedicated to revealing the intrinsic worth embedded in pre-owned apparel.

H4a: Information about the provenance of a product, specifically the status of the previous owner, significantly affects consumers' purchase intentions when purchasing circular products.

H4b: Only specific types of provenance information, relating to the previous owner's altruism or self-centeredness, influence the perceived value and purchase intention of circular products.

Methodology. *Through a funnel process, we designed two key studies to test our hypotheses. Study 1 focuses on a broad, cross-country sample of respondents, covering more generic aspects related to second-hand products, blockchain technology (BT), and the provenance effect, over a few dependent variables such as meaningfulness, uniqueness, and eventually purchase intention. Study 2 delves into background information by exploring on a smaller yet still cross-country scale, different connotations of this kind of information over the same dependent variables.*

Study 1

Setup

The main purpose of Study 1 was to examine how the embedded value of circular clothing influences consumers' purchase intention when the owner's information is encrypted using blockchain technology. In order to do so, we employed a cross-sectional design by conducting a 3x2 between-subject experiment with different information settings. We used a three-factor design: Factor 1 focused on status provenance (socialite v/s no-frills previous owner), Factor 2 on the type of circular product (remanufactured v/s second-hand), and Factor 3 on the blockchain technology (encrypted v/s no encrypted information). Each factor was manipulated using two similar short vignettes featuring a simple scarf but with distinct information. Thus, six different information settings were presented based on the factors considered. Participants were randomly assigned to one of the scenarios, and their responses were observed. To ensure the study's robustness, each treatment was assigned to a comparable number of respondents in a proportional manner.

3.1.2 Variables and data collection instruments

A multi-section survey served as the data collection instrument, initially gathering respondents' demographic data and general information about their clothing purchases. Tailored to the specific experiment shown, the survey included four different questions for assessing the manipulation conducted in the experiment. It followed sections with items related to uniqueness (Franke & Schreier, 2008), meaningfulness (Vogt, Jenny, & Bauer, 2013), and purchase intention (Chen & Chang, 2013). Respondents rated these statements on a 5-point Likert scale for agreement. All items were adapted to suit the study's purpose.

3.1.3 Sample

The sample population consists of consumers from five European countries: France, Germany, Italy, Poland, and Spain. Administered in January 2022, the survey was conducted through an independent online survey company to minimize sampling errors and reach a broader respondent base. The survey targeted pre-registered users on the platform, inviting them based on established socio-demographic quotas and meeting initial filters. Invitations were sent via email, providing participants with a link to the online platform for questionnaire completion. The compilation process included automatic checks to prevent missing, inconsistent, low-quality, or suspiciously rapid responses, potentially from bots. Respondents received incentives in the form of accumulated points, which can later be converted into digital rewards. At the end, we received 5124 complete responses as our random sample considered in this study. Table 1 represents the descriptive details of the sample population.

Table 1: Descriptive Statistics of Study 1

Description	Total
Total Responses	5124
Country	
Denmark	1018
Spain	1016
France	1012
Italy	1053
Poland	1025
Gender	
Male	2577
Female	2547
Age	
18 - 24	556
25 - 34	918
35 - 44	1034
45 - 54	1083
55 - 70	1533
Relationship Status	
In Relationship - LiveIn	1518
In Relationship - Non LiveIn	439
Single	861
Marriage - LiveIn	447
Marriage - Non LiveIn	1859
Education	
No	129
Degree or higher	545
Elementary diploma or nothing	375
Middle school	1941
Middle school without diploma	702
University without degree	1432
Presence of Senior citizen	1558
No Senior Citizen in house	3566
Presence of Junior citizen	2152
No Junior Citizen in house	2972

Study 2 Setup

The purpose of Study 2 was to validate, endorse, and explore more on the results obtained from Study 1. With respect to the results of study 1, study 2 was designed focusing specifically on the first two factors namely, type of circularity and status provenance. A slight modification was made to the presentation of Factor 1, which now specifically centers on comparing altruistic and self-centered previous owner (status provenance). Factor 2 remains unchanged, focusing on comparing the remanufactured and second-hand (type of circular product). The rest of the experimental setup remained consistent.

Variables and data collection instruments

Similar to Study 1, a multi-section survey was employed to gather necessary data. In addition to the variables from Study 1—uniqueness (Franke & Schreier, 2008), meaningfulness (Vogt, Jenny, & Bauer, 2013), and purchase intention (Chen & Chang, 2013)—three additional sections were included. These new sections covered word of mouth (Skarmeas, D., & Leonidou, C. N., 2013), perceived quality (Yoo, B., & Donthu, N., 2001), and consumer's intention to examine the property (Di Iorio et al., 2023). Furthermore, manipulations were verified with respective checks. Respondents rated these statements on a 5-point Likert scale for agreement, with all items adapted to suit the study's purpose.

Sample

Following the same protocols, Study 2 was conducted in January 2023 with random samples from Germany and Italy. We received a total of 2046 complete responses, with 1027 from Germany and 1019 from Italy. Table 2 provides descriptive details about the sample population.

Table 2: Descriptive Statistics of Study 2

	Responses
Total	2046
Country	
Germany	1027
Spain	1019
Gender	
Male	1000
Female	1046
Age	
18-24	188
25-34	380
35-44	381
45-54	438
55-70	659
Minors	
Yes	796
No	1250
Education	
Elementary license or none at all	13
Junior high school diploma	233
Middle-school diploma	984
Degree	651
Master's degree/postgraduate doctorate	165
Income	
Highest	70
High	135
Medium-high	321
Media	751
Medium-low	394
Low	209
Very low	90
Don't know/prefer not to indicate	76
Zone	
zone1	321
zone2	435
zone3	259
zone4	369
zone5	101
zone6	21
zone7	105
zone8	235
zone9	62
zone10	74
zone11	64

Results

Study 1 Results

As a first step, manipulation checks were conducted to verify the obtained sample. A contingency table was formed with respect to the manipulation check questions and each of the experiments and ANOVA was performed. The ANOVA results ($p < 0.00$) showed significant differences among the levels of the experiment factor. Hence, it appears to be effective in distinguishing between the experimental conditions.

Following the manipulation check, a series of validations are performed on the obtained sample in order to proceed with the factorial analysis. It included Bartlett's Sphericity Test to check the correlation between variables for factorial analysis ($p\text{-value} < 0.05$), Kaiser-Meyer-Olkin Test to evaluate the data suitability (overall MSA 0.97), Cronbach's alpha to measure the internal consistency reliability ($\alpha = 0.953$), Composite Reliability to evaluate the reliability of latent constructs (0.95), and finally, VIF to measure the multicollinearity among the considered variables (< 5) (Tabachnick & Fidell, 2007). Based on the results obtained, the data were clearly suitable for factor analysis. In general, the factor loadings ranged from 0.75 to 0.93 which is above the required threshold of 0.6 (Field, 2009; Yong, A. G., & Pearce, S., 2013) and their Cronbach alpha above 0.9.

Further, with respect to the latent constructs of the study, a model was created for Confirmatory Factorial Analysis. The fit of the model was verified which provided significant results to conclude ($CFI=0.981$, $TLI=0.978$, $RMSEA=0.048$). Table 3 represents the CFA results of the fitted model.

Table 3: Confirmatory Factorial Analysis Results of Study 1

Estimator							ML
Optimization method							NLMINB
Number of model parameters							39
Number of observations							5124
Model Test User Model:							
Test statistic							1710.474
Degrees of freedom							132
P-value (Chi-square)							0
Model Test Baseline Model:							
Test statistic							83022.698
Degrees of freedom							153
P-value							0
User Model versus Baseline Model:							
Comparative Fit Index (CFI)							0.981
Tucker-Lewis Index (TLI)							0.978
Loglikelihood and Information Criteria:							
Loglikelihood user model (H0)							-121616.362
Loglikelihood unrestricted model (H1)							-120761.125
Akaike (AIC)							243310.724
Bayesian (BIC)							243565.85
Sample-size adjusted Bayesian (SABIC)							243441.921
Root Mean Square Error of Approximation:							
RMSEA							0.048
90 Percent confidence interval - lower							0.046
90 Percent confidence interval - upper							0.05
P-value H ₀ : RMSEA ≤ 0.050							0.912
P-value H ₀ : RMSEA ≥ 0.080							0
Standardized Root Mean Square Residual:							
SRMR							0.031
Parameter Estimates:							
Standard errors							Standard
Information							Expected
Information saturated (h1) model							Structured
Latent Variables:							
	Estimate	Std.Err	z-value	P(> z)	Std.lv	Std.all	
m =~							
m1	1.324	0.019	68.816	0	1.324	0.803	
m2	1.358	0.018	76.743	0	1.358	0.861	
m3	1.342	0.018	74.359	0	1.342	0.844	
m4	1.345	0.018	75.362	0	1.345	0.851	
m5	1.348	0.018	74.304	0	1.348	0.844	
m6	1.353	0.018	76.144	0	1.353	0.857	
m7	1.315	0.019	70.546	0	1.315	0.816	
m8	1.182	0.019	62.78	0	1.182	0.754	
m9	1.248	0.018	68.145	0	1.248	0.798	
u =~							
u1	1.084	0.014	79.024	0	1.084	0.885	
u2	1.045	0.014	73.808	0	1.045	0.848	
u3	1.004	0.014	73.533	0	1.004	0.846	
u4	0.937	0.014	69.159	0	0.937	0.813	
pint =~							
pi1	1.138	0.014	81.111	0	1.138	0.891	
pi2	1.107	0.014	76.648	0	1.107	0.861	
pi3	1.134	0.014	79.998	0	1.134	0.884	
pi4	1.136	0.014	80.971	0	1.136	0.89	
pi5	1.148	0.014	82.749	0	1.148	0.902	
Covariances:							
	Estimate	Std.Err	z-value	P(> z)	Std.lv	Std.all	
m ~~							
u	0.581	0.01	56.562	0	0.581	0.581	
pint	0.595	0.01	60.855	0	0.595	0.595	
u ~~							
pint	0.721	0.008	92.603	0	0.721	0.721	
Variances:							
	Estimate	Std.Err	z-value	P(> z)	Std.lv	Std.all	
.m1	0.966	0.021	46.161	0	0.966	0.355	
.m2	0.643	0.015	43.553	0	0.643	0.259	
.m3	0.726	0.016	44.509	0	0.726	0.287	
.m4	0.686	0.016	44.129	0	0.686	0.275	
.m5	0.735	0.017	44.529	0	0.735	0.288	
.m6	0.662	0.015	43.811	0	0.662	0.266	
.m7	0.866	0.019	45.713	0	0.866	0.334	
.m8	1.06	0.022	47.387	0	1.06	0.432	
.m9	0.891	0.019	46.321	0	0.891	0.364	
.u1	0.325	0.009	34.504	0	0.325	0.217	
.u2	0.426	0.011	39.208	0	0.426	0.281	
.u3	0.4	0.01	39.404	0	0.4	0.284	
.u4	0.449	0.011	42.002	0	0.449	0.339	
.pi1	0.337	0.008	40.432	0	0.337	0.206	
.pi2	0.427	0.01	43.076	0	0.427	0.259	
.pi3	0.361	0.009	41.203	0	0.361	0.219	
.pi4	0.338	0.008	40.534	0	0.338	0.208	
.pi5	0.303	0.008	39.12	0	0.303	0.187	
M	1				1	1	
U	1				1	1	
pint	1				1	1	

*M = Meaningfulness, U = Uniqueness, pi & pint = Purchase Intention

As the final step, Ordinal Logistic Regression was performed to understand the influence and interaction of the considered variables. Table 3 shows that the model fits well for purchase intention and uniqueness, but only Lipsitz test results are significant for meaningfulness. Table 4 displays the Pseudo R-square since R-square isn't applicable in OLR. Table 5 presents parameter estimates, crucial for understanding the association between variables. The type of circular

product is significant for meaningfulness ($p < 0.00$), uniqueness ($p < 0.001$), and purchase intention ($p < 0.00$). Status provenance is significant only for purchase intention ($p < 0.00$), while blockchain encryption isn't significant for any variables. However, the interaction term of provenance and type of circularity is significant for all response variables: purchase intention ($p < 0.03$), meaningfulness ($p < 0.03$), and uniqueness ($p < 0.005$).

Considering the control variables of study 1, among the different countries, Spain, Italy, and Poland show significance with all three response variables, while France is significant only for uniqueness. Gender and Education level are significant only for meaningfulness. The presence of senior family members isn't significant, but the presence of junior members is significant for all response variables.

Table 4: Goodness of fit of study 1

	DV1 - Purchase Intention	DV2 - Meaningfulness	DV3 - Uniqueness
Lipsitz goodness of fit test for ordinal response models			
LR statistics	4.0808	20	7.3589
df	9	9	9
p-value	0.906	0.1791	0.5998
Hosmer and Lemeshow test (multinomial model)			
X-squared	21.559	43.419	21.47
df	16	16	16
p-value	0.158	0.0002416	0.1612
Pulkstenis-Robinson chi-squared test			
X-squared	35.287	45.285	34.925
df	26	26	26
p-value	0.1056	0.01095	0.1133

Table 5: Pseudo R Square of Study 1 models

	DV1 - Purchase Intention	DV2 - Meaningfulness	DV3 - Uniqueness
McFadden	2.62E-02	2.86E-02	2.86E-02
Cox and Snell	4.93E-02	4.54E-02	4.54E-02
Nagelkerke	5.77E-02	5.65E-02	5.65E-02

Table 6: OLR results of study 1

STUDY 1 - DV1 - Purchase Intention				
	Value	Std. Error	t value	p value
Secondhand	-0.60928028	0.11419533	-5.3354222	9.53E-08
Provenance	-0.41967678	0.11452164	-3.6646068	2.48E-04
No-Encryption	-0.15830146	0.11676839	-1.3556876	1.75E-01
Country				
Spain	0.55069896	0.09087276	6.0601107	1.36E-09
France	-0.14489078	0.08699274	-1.6655502	9.58E-02
Italy	0.43000293	0.0873328	4.923728	8.49E-07
Poland	0.47301886	0.09017816	5.2453816	1.56E-07
Gender				
Female	0.07523932	0.05570849	1.3505897	1.77E-01
Age				
25 - 34	-0.10059665	0.1091351	-0.9217626	3.57E-01
35 - 44	-0.42653669	0.10722555	-3.9779388	6.95E-05
45 - 54	-0.39521059	0.10780547	-3.6659603	2.46E-04
55 - 70	-0.20369364	0.10665149	-1.9098997	5.61E-02
Relationship Status				
In Relationship - Non LiveIn	-0.13363412	0.10511968	-1.271257	2.04E-01
Single	0.13250966	0.08685736	1.5256008	1.27E-01
Marriage - LiveIn	0.33330108	0.11078185	3.0086254	2.62E-03
Marriage - Non LiveIn	0.28030458	0.07563477	3.7060281	2.11E-04
Education				
Degree or higher	-0.20153625	0.19498979	-1.0335733	3.01E-01
Elementary diploma or nothing	0.05503027	0.20417714	0.2695222	7.88E-01
Middle school	-0.05627324	0.18254151	-0.3082764	7.58E-01
Middle school without diploma	0.07158394	0.19161315	0.3735857	7.09E-01
University without degree	-0.04042073	0.1846262	-0.2189328	8.27E-01
No Senior Citizen in house	-0.01104519	0.06244903	-0.1768673	8.60E-01
No Junior Citizen in house	-0.32705466	0.06461598	-5.0615138	4.16E-07
Secondhand:Provenance	0.34566556	0.15855099	2.1801539	2.92E-02
Secondhand: No-Encryption	0.20620213	0.15970782	1.291121	1.97E-01
Provenance: No-Encryption	0.19603545	0.16064791	1.2202801	2.22E-01
Secondhand:Provenance: No-Encryption	-0.21417368	0.22262124	-0.9620541	3.36E-01
Low Medium	-2.06599068	0.23133187	-8.9308517	0.00E+00
Medium High	-0.81285702	0.22965339	-3.5394949	4.01E-04

STUDY 1 - DV2 - Meaningfulness				
	Value	Std. Error	t value	p value
Secondhand	-0.55906	0.112718	-4.95982	7.06E-07
Provenance	-0.1687	0.11305	-1.49227	1.36E-01
No-Encryption	-0.16717	0.112595	-1.48468	1.38E-01
Country				
Spain	0.208046	0.091387	2.276541	2.28E-02
France	-0.0876	0.090339	-0.96964	3.32E-01
Italy	0.215863	0.089355	2.415789	1.57E-02
Poland	0.303984	0.091915	3.307223	9.42E-04
Gender				
Female	-0.1997	0.056467	-3.5366	4.05E-04
Age				
25 - 34	0.161783	0.108382	1.492708	1.36E-01
35 - 44	0.051745	0.107566	0.48105	6.30E-01
45 - 54	0.23159	0.108226	2.139874	3.24E-02
55 - 70	0.680782	0.108095	6.297976	3.02E-10
Relationship Status				
In Relationship - Non LiveIn	-0.14057	0.108425	-1.29648	1.95E-01
Single	0.022686	0.087999	0.257801	7.97E-01
Marriage - LiveIn	-0.16114	0.109998	-1.46492	1.43E-01
Marriage - Non LiveIn	0.193222	0.077464	2.494347	1.26E-02
Education				
Degree or higher	0.486679	0.201656	2.413407	1.58E-02
Elementary diploma or nothing	0.449881	0.209319	2.149265	3.16E-02
Middle school	0.735865	0.188739	3.898841	9.67E-05
Middle school without diploma	0.653219	0.197246	3.311701	9.27E-04
University without degree	0.953954	0.190918	4.996668	5.83E-07
No Senior Citizen in house	0.000626	0.06364	0.009844	9.92E-01
No Junior Citizen in house	-0.19378	0.065457	-2.96048	3.07E-03
Secondhand:Provenance	0.496463	0.159701	3.108695	1.88E-03
Secondhand: No-Encryption	0.475089	0.159064	2.986774	2.82E-03
Provenance: No-Encryption	0.195143	0.159345	1.224658	2.21E-01
Secondhand:Provenance: No-Encryption	-0.571	0.225351	-2.53384	1.13E-02
Low Medium	-2.72057	0.242276	-11.2292	0.00E+00
Medium High	0.624853	0.233458	2.676512	7.44E-03

STUDY 1 - DV3 - Uniqueness				
	Value	Std. Error	t value	p value
Secondhand	-0.6921	0.112182	-6.16947	6.85E-10
Provenance	-0.06531	0.115885	-0.56359	5.73E-01
No-Encryption	-0.10634	0.114907	-0.9254	3.55E-01
Country				
Spain	0.427318	0.09296	4.596816	4.29E-06
France	-0.1784	0.089071	-2.00294	4.52E-02
Italy	0.288739	0.088959	3.245737	1.17E-03
Poland	0.228529	0.090967	2.512227	1.20E-02
Gender				
Female	-0.03861	0.056556	-0.68263	4.95E-01
Age				
25 - 34	0.114083	0.110884	1.028853	3.04E-01
35 - 44	-0.08121	0.109304	-0.74302	4.57E-01
45 - 54	-0.21449	0.108955	-1.96862	4.90E-02
55 - 70	0.006771	0.108234	0.062562	9.50E-01
Relationship Status				
In Relationship - Non LiveIn	-0.15021	0.107663	-1.39514	1.63E-01
Single	0.028141	0.088383	0.318392	7.50E-01
Marriage - LiveIn	0.171232	0.112419	1.523159	1.28E-01
Marriage - Non LiveIn	0.188256	0.076787	2.451655	1.42E-02
Education				
Degree or higher	-0.24475	0.203772	-1.20112	2.30E-01
Elementary diploma or nothing	0.057772	0.213614	0.270449	7.87E-01
Middle school	-0.05843	0.191531	-0.30506	7.60E-01
Middle school without diploma	-0.06075	0.200224	-0.30342	7.62E-01
University without degree	-0.05703	0.193588	-0.29459	7.68E-01
No Senior Citizen in house	-0.01542	0.063579	-0.24249	8.08E-01
No Junior Citizen in house	-0.31129	0.065926	-4.72174	2.34E-06
Secondhand:Provenance	0.473794	0.160181	2.957868	3.10E-03
Secondhand: No-Encryption	0.245753	0.157406	1.561269	1.18E-01
Provenance: No-Encryption	0.154379	0.163535	0.944012	3.45E-01
Secondhand:Provenance: No-Encryption	-0.27064	0.226161	-1.19667	2.31E-01
Low Medium	-2.31222	0.239418	-9.65769	0.00E+00
Medium High	-0.78268	0.236964	-3.30295	9.57E-04

To summarize the obtained results, the findings of the study imply that secondhand products and status provenance relates to higher purchase intention among the consumers. Secondhand products entail higher perceived values among

consumers in terms of both meaningfulness and uniqueness, no matter the provenance status. Meanwhile, the third factor of the study - encryption using blockchain technology - seems to have no impact in any of the attributes. Interestingly, results obtained from the interaction terms reveal that the customers' purchase intention and the perceived uniqueness and meaningfulness of the circular product depends on both the type of circular product as well as the provenance information shared.

Study 2 Results

Similar to study 1, ANOVA was performed for manipulation check which provided effective ($p < 0.00$). Following the manipulation check, a series of validations were performed including Bartlett's Sphericity Test to check the correlation between variables for factorial analysis (p -value < 0.00), Kaiser-Meyer-Olkin Test to evaluate the data suitability (overall MSA 0.97), Cronbach's alpha to measure the internal consistency reliability ($\alpha = 0.971$), Composite Reliability to evaluate the reliability of latent constructs (0.97), and finally, VIF to measure the multicollinearity among the considered variables (< 5). As the results were positive, an exploratory factorial analysis was performed on the considered items resulting in factor loadings ranging from 0.6 to 1 above the required threshold of 0.6 (Field, 2009; Yong, A. G., & Pearce, S., 2013). Further, with respect to the latent constructs of the study, a model was created for Confirmatory Factorial Analysis. The fit of the model was verified which provided significant results to conclude (CFI=0.958, TLI=0.953, RMSEA=0.062). Table 7 represents the CFA results of the fitted model.

Table 7: Confirmatory Factorial Analysis Results of Study 2

Estimator	ML					
Optimization method	NLMINB					
Number of model parameters	71					
Number of observations	2046					
Model Test User Model:						
Test statistic	2940.696					
Degrees of freedom	335					
P-value (Chi-square)	0					
Model Test Baseline Model:						
Test statistic	62508.221					
Degrees of freedom	378					
P-value	0					
User Model versus Baseline Model:						
Comparative Fit Index (CFI)	0.958					
Tucker-Lewis Index (TLI)	0.953					
Loglikelihood and Information Criteria:						
Loglikelihood user model (H0)	-64831.32					
Loglikelihood unrestricted model (H1)	-63360.972					
Akaike (AIC)	129804.641					
Bayesian (BIC)	130203.919					
Sample-size adjusted Bayesian (SABIC)	129978.347					
Root Mean Square Error of Approximation:						
RMSEA	0.062					
90 Percent confidence interval - lower	0.06					
90 Percent confidence interval - upper	0.064					
P-value H ₀ : RMSEA \leq 0.050	0					
P-value H ₀ : RMSEA \geq 0.080	0					
Standardized Root Mean Square Residual:						
SRMR	0.041					
Parameter Estimates:						
Standard errors	Standard					
Information	Expected					
Information saturated (h1) model	Structured					
Latent Variables:						
	Estimate	Std.Err	z-value	P(> z)	Std.lv	Std.all
meaning =~						
c1	0.805	0.021	38.38	0	0.805	0.74
c2	0.879	0.019	45.569	0	0.879	0.832
c3	0.912	0.02	46.287	0	0.912	0.84
c4	0.88	0.02	43.336	0	0.88	0.805
c5	0.911	0.021	43.099	0	0.911	0.802
c6	0.9	0.02	44.88	0	0.9	0.824
c7	0.852	0.021	40.561	0	0.852	0.77
c8	0.741	0.022	33.165	0	0.741	0.664
unique =~						
u1	1.226	0.024	52.041	0	1.226	0.898
u2	1.22	0.023	51.92	0	1.22	0.897
u3	1.267	0.023	55.663	0	1.267	0.933
u4	1.228	0.023	52.36	0	1.228	0.901
purchInt =~						
pi1	1.266	0.024	53.055	0	1.266	0.906
pi2	1.249	0.023	53.533	0	1.249	0.911
pi3	1.272	0.023	55.056	0	1.272	0.926

pi4	1.269	0.023	55.312	0	1.269	0.928
pi5	1.274	0.024	53.733	0	1.274	0.913
Covariances:						
	Estimate	Std.Err	z-value	P(> z)	Std.lv	Std.all
meaning ~~						
unique	0.631	0.015	42.875	0	0.631	0.631
purchInt	0.643	0.014	45.203	0	0.643	0.643
unique ~~						
purchInt	0.838	0.008	109.646	0	0.838	0.838
Variances:						
	Estimate	Std.Err	z-value	P(> z)	Std.lv	Std.all
.c1	0.534	0.018	29.334	0	0.534	0.452
.c2	0.345	0.013	27.06	0	0.345	0.308
.c3	0.347	0.013	26.721	0	0.347	0.294
.c4	0.421	0.015	27.953	0	0.421	0.352
.c5	0.461	0.016	28.035	0	0.461	0.357
.c6	0.384	0.014	27.36	0	0.384	0.322
.c7	0.499	0.017	28.806	0	0.499	0.408
.c8	0.695	0.023	30.262	0	0.695	0.559
.u1	0.361	0.014	25.862	0	0.361	0.194
.u2	0.363	0.014	25.95	0	0.363	0.196
.u3	0.238	0.011	22.015	0	0.238	0.129
.u4	0.349	0.014	25.621	0	0.349	0.188
.pi1	0.349	0.013	27.212	0	0.349	0.179
.pi2	0.32	0.012	26.916	0	0.32	0.17
.pi3	0.271	0.011	25.752	0	0.271	0.143
.pi4	0.26	0.01	25.515	0	0.26	0.139
.pi5	0.325	0.012	26.783	0	0.325	0.167
Meaningfulness	1				1	1
Uniqueness	1				1	1
Purchase Intention	1				1	1

*M = Meaningfulness, U = Uniqueness, pi & pint = Purchase Intention

Ultimately, Ordinal Logistic Regression was performed on the study model. Similar to study 1, tests to understand the model fit and to obtain their Pseudo R Square values were performed and represented in Table 8 and 9 respectively. Finally, the estimate values to understand the relationship between the response and explanatory variables are highlighted in Table 10.

Confirming the results of study 1, study 2 also proves that the type of circular product factor is statistically significant with meaningfulness ($p < 0.00$), uniqueness ($p < 0.001$), and purchase intention ($p < 0.00$). Contrastingly, status provenance factor showed no significant effects. In addition, the interaction between these factors was also not significant. Considering the control variables of the study, gender showed significance to purchase intention and uniqueness but not for meaningfulness. Age group is strongly related only to meaningfulness. Similarly, family size has strong significance in purchase intention but with less impact on meaningfulness and uniqueness. The presence of minors in the family shows significance with purchase intention and uniqueness. Lastly, respondent's income level has a strong relationship with all the response variables.

Table 8: Goodness of fit of study 2

	DV1 - Purchase Intention	DV2 - Meaningfulness	DV3 - Uniqueness
Lipsitz goodness of fit test for ordinal response models			
LR statistics	15.008	10.917	19.814
df	9	9	9
p-value	0.907	0.2815	0.0191
Hosmer and Lemeshow test (multinomial model)			
X-squared	22.361	14.791	22.402
df	16	16	16
p-value	0.1319	0.54	0.1307
Pulkstenis-Robinson chi-squared test			
X-squared	11.427	15.933	12.506
df	11	11	11
p-value	0.4082	0.1436	0.3269

Table 9: Pseudo R Square of Study 2 models

	DV1 - Purchase Intention	DV2 - Meaningfulness	DV3 - Uniqueness
McFadden	8.03E-02	5.92E-02	8.07E-02
Cox and Snell	1.56E-01	8.55E-02	1.56E-01
Nagelkerke	1.78E-01	1.10E-01	1.77E-01

Table 10: OLR results of study 2

STUDY 2 - DV1 - Purchase Intention					
	Value	Std. Error	t value	p value	
Secondhand	-0.77096222	0.12085369	-6.3793021	1.78E-10	
Selfish_Info	-0.12974446	0.12697086	-1.0218444	3.07E-01	
Country					
Italy	0.16037981	0.1323633	1.2116637	2.26E-01	
Gender					
Female	0.17431612	0.08814744	1.9775517	4.80E-02	
Zone					
zone2	0.1459839	0.14699921	0.9930931	3.21E-01	
zone3	0.1498541	0.17110107	0.8758222	3.81E-01	
zone4	0.27819695	0.15594258	1.7839704	7.44E-02	
zone5	0.26197013	0.24037674	1.0898314	2.76E-01	
zone6	0.2501186	0.43863186	0.5702244	5.69E-01	
zone7	0.02389448	0.24295389	0.0983499	9.22E-01	
zone8	0.18497579	0.19465327	0.9502835	3.42E-01	
zone9	0.32194378	0.29833791	1.0791246	2.81E-01	
zone10	-0.32616814	0.26899241	-1.2125552	2.25E-01	
zone11	0.04909987	0.29507937	0.1663955	8.68E-01	
Age					
25-34	0.38206991	0.18767498	2.0358063	4.18E-02	
35-44	0.29793116	0.18688945	1.5941572	1.11E-01	
45-54	0.11144605	0.17762087	0.6274379	5.30E-01	
55-70	0.09332182	0.17236124	0.5414316	5.88E-01	
Number of habitants					
10 thousand-30 thousand	0.2722572	0.13928614	1.9546612	5.06E-02	
30 thousand-100 thousand	0.11715518	0.13573186	0.8631369	3.88E-01	
100 thousand-250 thousand	0.34928924	0.16873119	2.0700929	3.84E-02	
250 thousand-500 thousand	0.31209018	0.20258363	1.5405499	1.23E-01	
>500 thousand	0.41597734	0.14784568	2.8135914	4.90E-03	
Family size in numbers					
2	0.27988916	0.13197218	2.1208194	3.39E-02	
3	0.48818314	0.15369596	3.1762913	1.49E-03	
4	0.34757625	0.16287265	2.1340369	3.28E-02	
5	0.48815287	0.2384764	2.0469651	4.07E-02	
6	0.91196804	0.43900858	2.0773354	3.78E-02	
7	0.38800915	0.66961212	0.5794536	5.62E-01	
8+	0.24109706	0.61631589	0.3911907	6.96E-01	
Minors					
No	0.33368863	0.12194108	2.7364743	6.21E-03	
Education					
Junior high school diploma	-0.21184061	0.54505313	-0.3886605	6.98E-01	
Middle-school diploma	-0.27058496	0.53422791	-0.5064972	6.13E-01	
Degree	0.03706448	0.53868729	0.0688052	9.45E-01	
Master's degree/postgraduate doctorate	-0.54652175	0.55705411	-0.9810928	3.27E-01	
Income					
High	-0.72868993	0.44550241	-1.6356588	1.02E-01	
Medium-high	-1.76941988	0.41152182	-4.2996988	1.71E-05	
Media	-1.99693743	0.40920517	-4.8800396	1.06E-06	
Medium-low	-1.84480473	0.41792245	-4.4142274	1.01E-05	
Low	-2.06763714	0.4290575	-4.8190211	1.44E-06	
Very low	-2.26084196	0.45667819	-4.9506239	7.40E-07	
Don't know/prefer not to indicate	-2.42277405	0.45978603	-5.2693512	1.37E-07	
Secondhand:Selfish_Info	0.01322838	0.17523349	0.07549	9.40E-01	
Low/Medium	-2.31847088	0.68161508	-3.4014372	6.70E-04	
Medium/High	-1.17183324	0.68070719	-1.7214938	8.52E-02	

STUDY 2 - DV2 - Meaningfulness					
	Value	Std. Error	t value	p value	
Secondhand	-0.53776	0.140647	-3.82344	1.32E-04	
Selfish_Info	0.074512	0.154164	0.483328	6.29E-01	
Country					
Italy	0.002012	0.151768	0.013257	9.89E-01	
Gender					
Female	0.093665	0.101234	0.925232	3.55E-01	
Zone					
zone2	-0.01523	0.167346	-0.09102	9.27E-01	
zone3	0.177662	0.201497	0.881711	3.78E-01	
zone4	0.011914	0.178216	0.066852	9.47E-01	
zone5	-0.07343	0.272188	-0.26979	7.87E-01	
zone6	-0.37082	0.517449	-0.71663	4.74E-01	
zone7	-0.1211	0.267661	-0.45245	6.51E-01	
zone8	-0.15537	0.221466	-0.70156	4.83E-01	
zone9	0.528165	0.383007	1.378995	1.68E-01	
zone10	-0.57495	0.288415	-1.9935	4.62E-02	
zone11	-0.41884	0.32068	-1.3061	1.92E-01	
Age					
25-34	0.621642	0.213811	2.90744	3.64E-03	
35-44	0.622161	0.211107	2.947143	3.21E-03	

45-54	0.659459	0.200148	3.294862	9.85E-04
55-70	0.595374	0.192321	3.095728	1.96E-03
Number of habitants				
10 thousand-30 thousand	-0.02224	0.156442	-0.14215	8.87E-01
30 thousand-100 thousand	0.227597	0.158409	1.436771	1.51E-01
100 thousand-250 thousand	0.004411	0.189348	0.023298	9.81E-01
250 thousand-500 thousand	0.085111	0.230467	0.369299	7.12E-01
>500 thousand	0.062299	0.16567	0.376042	7.07E-01
Family size in numbers				
2	0.104763	0.146343	0.715871	4.74E-01
3	0.342947	0.175189	1.957584	5.03E-02
4	0.240112	0.185073	1.297393	1.94E-01
5	0.979205	0.30986	3.160149	1.58E-03
6	1.135536	0.55077	2.061726	3.92E-02
7	1.783766	1.113073	1.60256	1.09E-01
8+	0.036771	0.725785	0.050664	9.60E-01
Minors				
No	-0.09586	0.141782	-0.6761	4.99E-01
Education				
Junior high school diploma	-0.4443	0.607104	-0.73184	4.64E-01
Middle-school diploma	0.009341	0.597	0.015647	9.88E-01
Degree	0.143462	0.603019	0.237906	8.12E-01
Master's degree/postgraduate doctorate	-0.45544	0.623035	-0.731	4.65E-01
Income				
High	-1.02349	0.590149	-1.73429	8.29E-02
Medium-high	-1.92696	0.54997	-3.50376	4.59E-04
Media	-2.05646	0.549154	-3.74478	1.81E-04
Medium-low	-2.05039	0.557771	-3.67604	2.37E-04
Low	-2.1298	0.565468	-3.76644	1.66E-04
Very low	-2.36935	0.589095	-4.02202	5.77E-05
Don't know/prefer not to indicate	-2.55641	0.591871	-4.3192	1.57E-05
Secondhand:Selfish_Info	-0.34766	0.202632	-1.71572	8.62E-02
Low/Medium	-4.46642	0.827987	-5.39431	6.88E-08
Medium/High	-2.40098	0.823126	-2.9169	3.54E-03

STUDY 2 - DV3 - Uniqueness				
	Value	Std. Error	t value	p value
Secondhand	-0.86736	0.121503	-7.13863	9.43E-13
Selfish_Info	-0.13919	0.12865	-1.08196	2.79E-01
Country				
Italy	-0.16854	0.133736	-1.26021	2.08E-01
Gender				
Female	0.233407	0.088744	2.630113	8.54E-03
Zone				
zone2	0.114147	0.148216	0.77014	4.41E-01
zone3	-0.0561	0.17287	-0.3245	7.46E-01
zone4	0.36242	0.158037	2.293257	2.18E-02
zone5	0.307038	0.244908	1.253689	2.10E-01
zone6	0.453281	0.477846	0.948594	3.43E-01
zone7	0.078488	0.245649	0.319511	7.49E-01
zone8	0.044443	0.195437	0.227404	8.20E-01
zone9	0.259456	0.299408	0.866563	3.86E-01
zone10	-0.27087	0.266855	-1.01505	3.10E-01
zone11	-0.1604	0.28417	-0.56445	5.72E-01
Age				
25-34	0.343268	0.190153	1.805215	7.10E-02
35-44	0.37893	0.190577	1.988328	4.68E-02
45-54	0.172863	0.18073	0.956469	3.39E-01
55-70	0.14611	0.174417	0.837703	4.02E-01
Number of habitants				
10 thousand-30 thousand	0.130414	0.139956	0.931824	3.51E-01
30 thousand-100 thousand	-0.05286	0.136649	-0.38684	6.99E-01
100 thousand-250 thousand	0.166572	0.168249	0.990031	3.22E-01
250 thousand-500 thousand	0.171024	0.201346	0.849402	3.96E-01
>500 thousand	0.231682	0.14834	1.561828	1.18E-01
Family size in numbers				
2	0.150908	0.132082	1.142534	2.53E-01
3	0.346485	0.154747	2.239041	2.52E-02
4	0.3366	0.163979	2.05271	4.01E-02
5	0.316484	0.244127	1.296389	1.95E-01
6	0.930942	0.471673	1.973701	4.84E-02
7	0.161956	0.64081	0.252736	8.00E-01
8+	0.192982	0.663294	0.290945	7.71E-01
Minors				
No	0.37084	0.123362	3.006121	2.65E-03
Education				
Junior high school diploma	0.03339	0.547298	0.061008	9.51E-01
Middle-school diploma	0.051313	0.536818	0.095588	9.24E-01
Degree	0.141333	0.541575	0.260967	7.94E-01
Master's degree/postgraduate doctorate	-0.50789	0.559091	-0.90842	3.64E-01
Income				
High	-0.86391	0.46597	-1.85401	6.37E-02
Medium-high	-1.9596	0.432763	-4.52812	5.95E-06
Media	-2.04533	0.431008	-4.74546	2.08E-06

Medium-low	-2.1448	0.439174	-4.8837	1.04E-06
Low	-2.23394	0.44894	-4.97604	6.49E-07
Very low	-2.45796	0.477568	-5.14681	2.65E-07
Don't know/prefer not to indicate	-2.77954	0.479079	-5.80183	6.56E-09
Secondhand:Selfish_Info	-0.04176	0.176124	-0.23711	8.13E-01
Low Medium	-2.75376	0.69787	-3.94595	7.95E-05
Medium High	-1.59337	0.696639	-2.28723	2.22E-02

The findings of this study support that the purchase intention of consumers and its perceived meaningfulness is influenced by circularity of the product. But it fails to support the main hypotheses regarding the influence of provenance effect on consumer's purchase intention. Further, there is no other influence in the perceived meaningfulness and uniqueness.

Table 11: Summary of hypotheses and results

Hypotheses	Results
H1: The type of circular product (remanufactured vs. second-hand) has a significant positive effect on consumers' purchase intention.	Supported
H2: The type of circular product (remanufactured vs. second-hand) has a significant positive effect on meaningfulness and uniqueness.	Supported
H3a: The encryption of owner information using blockchain technology can affect the perceived meaningfulness and uniqueness of circular clothing.	Not supported
H3b: The encryption of owner information using blockchain technology can have a significant positive effect on consumers' purchase intention.	Not supported
H4a: Information about the provenance of a product, specifically the status of the previous owner, significantly affects consumers' purchase intentions when purchasing circular products.	Supported
H4b: Only specific types of provenance information, relating to the previous owner's altruism or self-centeredness, influence the perceived value and purchase intention of circular products.	Not supported

Research limitations. *It's interesting that we obtained two contrasting results by using the same experimental setup. In the first study, adding provenance information to second-hand circular products was impactful. However, when provenance details were limited to selfishness and altruism in study 2, there was no effect. This contrasting results rises two questions: Does only a specific type of provenance information influence buying intentions? And if so, what kind of provenance information is effective? Thus, we need more clarity on the results obtained, which further opens up the path for future research direction in this field.*

Furthermore, in both studies, circular products were inherently viewed as unique and meaningful by consumers. This suggests that circular products have inherent value for consumers. Adding previous owner information can enhance perceived meaningfulness and uniqueness of the circular product. However, considering the results from study 2, the specific type of ownership information that can have a significant relationship remains unanswered. Hence, future research should focus on these aspects while considering the intangible values of the products studied.

Managerial implications. *For practitioners, the knowledge that circular products contain superior value can be a valuable marketing tool. Especially for second-hand market and its business players, it can directly help in boosting their sales and business by incorporating provenance information in their marketing strategy. Besides private reselling markets, companies can appeal to consumers who are looking for more sustainable and ethical purchasing options by promoting the fact that their products have been re-crafted. This can help companies differentiate themselves in the market and attract consumers by providing them with products with greater meaning and value. Furthermore, this study also suggests that companies may benefit from investing in the development of new business models that emphasize the value of remanufactured and reused products. By adopting circular business models, companies can capture more value from their products and create new revenue streams, while also contributing to a more sustainable economy.*

Originality of the paper. *Our attempt to explore the provenance of used products in terms of circularity is novel, yet further studies focusing on this aspect are necessary for a better understanding. Previous research on provenance mainly focuses on the origin of raw materials and production processes, involving people (B. Luceri et al., 2016, M. Spence et al., 2018, SK. Prathap et al., 2022). Yet, there hasn't been any research on provenance concerning previous ownership and its link to circular products. To our knowledge, this is the first study to investigate how provenance, product circularity, and their perceived values are interconnected.*

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Reshaping customers' lifelong journey in the health and wellness contexts

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Abstract

Nowadays, the boundaries between healthcare and wellness are blurring, leading to a convergence phenomenon across these industries. While previous works mainly focused on the convergence between healthcare and technology, this study aims to integrate this perspective, including the wellness domain. In doing so, the present research will focus on the consumer point of view, trying to identify the actual journey across the health and wellness industries. In order to understand the structure and the touchpoints of this path, we will conduct a focus group involving healthcare and wellness consumers. Theoretically, the study contributes to the existing literature by exploring this new scenario of convergence. From a managerial standpoint, the research provides guidelines for companies within healthcare and wellness industries, supporting them in building strategies funded on consumer behavior knowledge.

Key words: health, wellness, convergence, lifelong journey, touchpoints

Framing of the research. Health and Wellness are two industries typically considered as two separate entities (Greenberg, 1985). However, several changes, both from the demand and offer side, are reshaping the current scenario towards a single widespread sector where boundaries are blurred. In 2022, in Italy, healthcare expenditure amounted to 171.9 billion Euros, with private expenditure accounting for 21% and steadily increasing over the past ten years (ISTAT, 2023). Between 2010 and 2017, the healthcare system experienced a depletion in staff, number of hospitals, and beds, leading to increased reliance on partnerships with the private healthcare sector (Buzelli & Boyce, 2021). In this scenario, there is also a constantly growing wellness market worth \$5.6 trillion globally (GWI, 2023), with Italy ranking fourth among European countries in market size in 2020 (GWI, 2021). Consumers move within the health and wellness sectors to balance their lives and achieve their optimal selves by taking care of themselves in intangible ways as well (Grénman et al., 2019).

From Patients to Customers

From the demand point of view, integration can be examined through the lens of consumer behavior, a consumer who is increasingly informed and aware of health, wellness and well-being (McKinsey, 2021). Nowadays consumers are more conscious and sensitive about their health-related issues (Rathna & Sumathy 2022) and this pushes them towards the adoption of healthy behaviors and towards the search for diet, exercise, better sleep and energy levels and stress management (KPMG, 2018). Indeed, today, an increasingly large percentage of individuals pay great attention to health and wellness (Suleman, 2021), leading to the development of a more holistic approach to medicine (Global Wellness Summit, 2021). The traditional notion of the passive patient is thus replaced with that of a health and well-being consumer involved and proactive in the design and management of his or her own care (Crié & Chebat, 2013), in fact it should be considered just as an individual, in line with the person-centered approach, that views body systems as interrelated (Starfield, 2011) and implies a focus on the totality of the person, considering the human-being rather than the patient (De Maeseneer, 2012).

This new, more involved and empowered consumer adopts a behavior that is expressed on three fronts: 1) self-monitoring, also using new digital tools (François et al., 2023); 2) healthy habits, as avoid smoking, eat well or exercise

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(Anderson, 2019); 3) shared decision-making process, through which the individual becomes involved in choices that affect his or her state of well-being (Stiggelbout, 2012). This is also confirmed by Zhao (2016), who states that the individual should be involved in every decision or behavior that affects his life.

This approach, also supported by the spread of modern information technologies, leads to new consumer expectations (Simonse, Albayrak & Starre, 2019), which health and wellness companies must take into account to increase their satisfaction. These include the centrality of experience, the pursuit of accessibility, the transparency in communication in terms of procedures, treatments and costs and a special attention to privacy, looking for a balance between exploiting data for personalization purposes and safeguarding the security of confidential information (Agarwal et al., 2020).

Offer integration

Industrial convergence can be defined as the process of boundaries blurring through the convergence of value propositions, technologies and markets (Bröring, & Leker, 2007).

The current meaning of “health” goes beyond mere absence of illness, encompassing aspects of wellness and wellbeing (Hughner & Kleine, 2004; Wang et al., 2010; Kantar, 2021). In fact, following the definition of health provided by the World Health Organization, health can be defined as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (World Health Organization, 2024). Therefore, we can assess that the process of convergence between health and wellness is an established concept. Moreover, scholars have studied the process of convergence between healthcare and technology (Schiavone et al., 2021), identifying a digital health innovation ecosystem, in which several actors, like digital health communities, healthcare stakeholders and institutions, interact through multiple touchpoints within a digital health environment, to monitor and improve the wellbeing and health of patients, to empower patients in the management of their health and that of their families (Iyawa et al., 2016; Singhal et al., 2020). Enhancing wellness, achieving better health results, and generating broader individual and collective benefits through preventive measures necessitate an approach guided by principles such as people education, activation, engagement, and empowerment (Pennucci et al., 2022).

Within this scenario, many initiatives in health promotion and prevention are underway in response to evolving societal needs, such as an aging population and the rise of chronic diseases. Healthcare organizations are placing growing emphasis on primary care, encouraging healthy lifestyles, and supporting individuals in overseeing their overall well-being, health, and diseases (Pennucci et al., 2022). In addition to integrating within individual providers’ offerings, the integration among the offerings of various providers is also a crucial aspect in this scenario., Tthe collaboration of public healthcare organizations with the private sector aimed for the adoption of hybrid and collaborative governance structures during the pandemic, which appeared a crucial strategy for healthcare entities seeking proactive measures against future shocks (Da Ros et al., 2024), and can be crucial in the (new) normal times as well.

A lifelong journey

A recent definition of customer experience incorporates the idea of the “customer’s journey” across various touchpoints (Lemon and Verhoef, 2016, p. 6). To establish and sustain strong, positive, and enduring relationships between providers and users, the overall experience needs enhancement, by taking into account the entire user pathway across all touchpoints within a service experience (Bolton et al., 2014; McColl-Kennedy et al., 2015). A positive care experience is essential for building trust not only in private, but also in public healthcare institutions, ensuring access to care, and promoting well-being and good health (Pennucci et al., 2018). However, healthcare organizations often lack a comprehensive understanding of these journeys, which are often fragmented among different providers and settings (Nutti et al., 2017). Additionally, the design process of healthcare services frequently neglects the identification of stakeholder groups and their needs, inadequately involving them whether they are already diagnosed patients (c) or individuals with needs and preferences related to wellbeing and wellness (De Rosis et al., 2019b, Bonciani et al., 2020).

This shift towards wellbeing and wellness underscores the importance of the framework of Pennucci and colleagues (2022) revolves around education, activation, engagement, and empowerment principles, by building on the crucial role of providers, individual and communities (Huang & Lee, 2022) in enabling “health care preventive behaviors” (Jayanti & Burns, 1998). The focus on prevention is particularly intriguing in the realm of healthcare marketing (Anderson et al., 2019). It involves empowering individuals to play an active role within their personal wellbeing and health condition as well as towards the community, covering aspects from promoting health and wellbeing to daily health-related behaviors and extending to lifelong journeys, including digital landscapes and the commoditization of health goods and services (Cavusoglu & Demirbag-Kaplan, 2017). In this context, engagement becomes pivotal, emphasizing collaborative processes involving both providers and users throughout a multifaceted, lifelong health journey (Berkowitz, 2021). This holistic viewpoint not only fosters improved health outcomes but also enables individuals to assume responsibility for their well-being, aligning with the evolving understanding of health in contemporary paradigms. In this scenario, patients are engaged by the possibility of influencing their own decisions and increasing their knowledge through easier access to information facilitated by new technologies (Osei et al., 2018; François, J. et al., 2023).

Purpose of the paper. Drawing from Pennucci et al. (2022) framework, the present study aims to investigate the integration between these two industries, by exploring how individuals interact with different touchpoints provided by health and wellness providers when it comes to their daily health and wellness-related behaviors. In doing so, a

qualitative methodology based on a focus group study will be adopted, to have a deeper understanding of such phenomenon.

This study contributes to the literature on health and wellness consumers. It also offers practical insights to understand the consumer journey across healthcare and wellness industries.

Methodology and Expected Results. The aim of the present study is to explore the recent evolution of the integration between health and wellness sectors from the individuals' point of view. Given the limited insights provided by the literature on such phenomenon, we adopt an inductive qualitative approach drawing on the focus group method as an effective means of exploratory data collection (Calder, 1977; Stewart and Shamdasani, 2014; Fern and Fern, 2001). The focus group enables us to observe group interaction, which is the hallmark of this method (Belzile and Öberg 2012). This enhanced level of interaction helps participants offer multiple facets compared to one-on-one interviews (Krueger, 2014), which is especially beneficial given the complexity of the topic under investigation.

Drawing from Pennucci et al. (2022) framework, the focus group is designed to deepen understanding of how individuals experience their lifelong journey by interacting across different touchpoints in their daily health and wellness-related behaviors. As suggested by Pennucci and colleagues (2022) to make people able to improve their health and well-being, healthcare services should educate, activate, engage and empower them. According to this holistic approach, other providers such as private organizations promoting people's wellness and well-being can thus implement specific interventions to sustain them and to contribute to redesign their lifelong journey.

Following Fern and Fern's (2001) guidelines, with facilitation by a moderator and a common discussion protocol prepared prior to the research team (Bell et al., 2018), a sample between 10 and 15 participants will take part in the focus group. Specifically, a purposive sample through referrals (Arnold and Reynolds, 2003) will be used. Participants who had at least one experience with health and wellness providers through different touchpoints will be recruited, because the aim is to understand their experiences with such services.

The focus group will last around 2 h. We will start by developing a portrait of people's willingness to promote their health and wellness behaviors. We will then explore the main factors that affect this process, by focusing on those that inhibit or facilitate their education, activation, engagement and empowerment when interacting with different touchpoints. Before the focus group begins, the moderator will explain the procedure and the purpose of the session. A substantive portion of the focus group will be then developed through the use of questions such as "How do you behave with regards to your health or wellness? Have you ever interacted with health or wellness providers? How have you interacted with them? When did it occur?; What touchpoints do you usually use to interact with these services?". The session will be then transcribed. The study will adopt an interpretive methodology to identify themes emerging from the analysis of the data. According to Yin (2013), the analytic framework comprised three stages: (1) analysis of transcripts; (2) identification of common recurrent themes; and (3) analysis of shared themes. A coding team of two researchers independently will read and analyze the transcripts to ensure the internal validity of the coding process (Weber, 1990); subsequently, the results will be compared, leading to interrater reliability (Cohen, 1960), and they will be measured with Cohen's kappa coefficient (0.83). A thematic analysis will be carried out based upon themes that will emerge from the focus group.

Research limitations. Two main issues may represent limitations for this research. The first limitation may be related to validity and reliability of data collected, as results may be affected by the number and characteristics of individuals who will attend the focus group. A careful selection of participants and the conduction of the focus group by expert researchers will contribute in minimizing these limitation of the methodology. The second limitation is that, from a theoretical point of view, the topic of the study is quite new and comparing the result of the research with the existing literature may be complex.

Managerial implications. From a managerial standpoint, this research will provide valuable information to companies and organizations following this process of convergence between industries. The expected results will help managers to understand the individuals' path through the lens of consumer behavior, and to realize the person-centered approach taking into account multiple events and conditions throughout an individual's life (Starfield, 2011).

Originality of the paper. The originality of this research lies in the cutting-edge topic under study, namely the Customer Lifelong Journey across health and wellness contexts. The research thus contributes to a scarce domain in the literature, aiming to address existing gaps in the topic of convergence between health and wellness and the new lifelong customer journey.

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A Well Mind, A Wise Choice: A Systematic Review of Wellness and its Influence on Food Decision-Making

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Abstract

Wellness is an individual state of mind that promote optimal health and well-being through personal responsibility, intentions, and actions. The dynamic nature of wellness is expressed through an active process of self-empowerment and choices, including the physical dimension associated with a lifestyle that also involves nutrition. Although the association between wellness, well-being, and health has been studied in the literature, the existing body of knowledge appears fragmented and lacks consolidation regarding the role of wellness and its dimensions in the food purchase decision-making process. A systematic literature review was conducted and a sample of 85 articles relevant to the investigation was selected. The analysis found that wellness plays a mediating function in consumer purchase decision-making, and it is represented by dimensions that relate to health: motivation to feel better, motivation for preventive health, and healthy lifestyle.

Keywords: *wellness; health; consumer behavior; decision-making process; food.*

Framing of the research. *The Food Marketing Institute (2023) recently confirmed the power of health and wellness in the food industry. This is supported by the continuous evolution of consumer choice of food consumption, and from the increased focus on selecting healthy and nutritious options (Petrescu et al., 2020; Van Loo et al., 2020). At the same time, food stores are becoming key venues for health and wellness by carrying out initiatives to meet consumers' expectations and needs (Cao et al., 2020). Examining the key factors that drive food choice is necessary to frame the food consumption perspective. According to previous studies, health-related motivations are one of the main factors driving consumers' food purchasing decisions (Ali & Ali, 2020), and elements such as high nutritional value and the potential to reduce the risk of cancer or heart disease, play a vital role in consumers' purchasing intentions (Darian & Tucci, 2011). Food choices can impact overall evaluations of life by influencing fulfillment and satisfaction, whilst recognizing that domain satisfaction can influence individual health (World Health Organization, 2011). Some authors have begun to develop and study the "Food well-being (FWB)" concept, defined as a positive psychological, physical, emotional, and social relationship with food at both the individual and societal levels. They highlight the critical relationship between food and subjective well-being in contributing to a better understanding of consumer food choices (Ares et al., 2014; Block et al., 2011; Hémar-Nicolas & Ezan, 2019). In the current context of changing health paradigms, leads to the conclusion that the transition from a medical disease paradigm to a paradigm based on well-being and wellness, in which dietary practice continues to evolve, and it is recognized that lifestyle-related behaviors, such as choosing healthy foods, play an essential role in achieving optimal health (McMahon, 2013). Traditionally, the concept of well-being refers essentially to psycho-physical health (McFadden, 2014); it involves experiencing health, happiness, and prosperity, including good mental health and high life satisfaction (McMahon et al., 2010). As the scenario evolved, it began to take on a different meaning, enriched with other aspects that Mogilner et al. (2018) identified as physical, emotional, mental, social, spiritual, organizational, material, economic, cultural, and environmental. The countless fields of application and definitions of well-being have led to considerable definitional ambiguity, which also extends to the use and its functions. The World Health Organization tended to attribute the concept of health an additional value to well-being of the mere absence of disease (WHO, 1946), defining it as a state of absolute physical, mental, and social well-being. Previous studies have observed the importance of keeping well-being and wellness distinct, especially in the food sector (McMahon et al., 2010). This distinction is crucial for understanding how nutrition can impact these two dimensions and*

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developing interventions for more effective and healthier food choices. Their value is recognized in the health market as a sales opportunity for nutrition-conscious and health-conscious consumers (Short, 2005; Smith, 2005).

According to the Global Wellness Institute's definition (2023), wellness is an active and individual state of mind rather than a passive or static state, driven by personal responsibility, and associated with intentions, choices, and actions promoting optimal health and well-being. Based on this definition, wellness is positive and affirmative, a conscious, self-directed, and evolving process (Stoewen, 2015) that aims to improve well-being. Therefore, while well-being represents an achieved state, wellness is described as an ongoing journey. In light of this, wellness encompasses a holistic approach to living a fulfilling life across several dimensions such as mental, emotional, spiritual, social, and physical (Kobrin, 2017). Although there are similarities between them, wellness is distinguished by its dynamic nature, which does not represent a fixed state of being such as happy, healthy, or achieved well-being (Oliver et al., 2018). Instead, wellness involves an active process of awareness and choices, including the physical dimension consumers associate with healthy lifestyles, choices, and market offering (Wickramaratne et al., 2020).

A key difference is how the state transition dynamics lead to wellness as a change toward a new or regenerated state (Morganti et al., 2021). Therefore, wellness is upbeat and affirmative and can be considered a conscious, self-directed, and evolving process (Stoewen, 2015) aimed at improving well-being. It is definable as a state of static well-being achieved at a given time. Studies (e.g., Meiselman, 2016) have established that the concept of wellness emerges when the transition from "being healthy" to "feeling better" occurs.

Wellness appears to be more relevant for investigating the food decision-making process precisely because of the field of application of food consumption (Nunes et al., 2020). Food consumption is a continuous activity over time, and a healthy diet confers longevity due to its body's effects (Moosavi-Movahedi et al., 2021).

Some studies have observed that during the food purchasing process consumers are susceptible to a wide range of socio-psychological and cultural models that influence consumer decision-making (Bublitz et al., 2010). Therefore, the ways in which consumers make decisions are influenced by wellness-related factors such as the propensity to longevity and being in good health (Nunes et al., 2020).

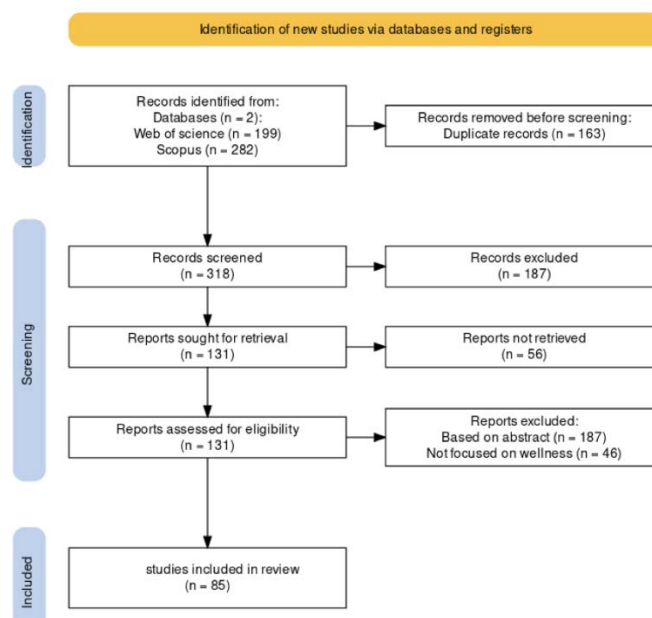
During the evaluation of alternatives phase, the consumer evaluates product's attributes, making comparisons and at the same time looking for benefits deriving from the specific product (Puth et al., 1999). Previous research (Van Der Merwe et al., 2010) stated that the healthiness of the products is evaluated in a phase prior to the evaluation called "pre-purchase search"; in the evaluation phase, however, consumers pay attention to nutritional information and information regarding ingredients which have to do with overall quality. The product attributes that consumers positively evaluated during purchasing decisions appear to be quality (Ali et al., 2021) and health benefits, followed by nutritional content, hygiene, certification of the food product, and the natural content of the product.

Understanding the differences between well-being as an achieved state and wellness as an ongoing process focused on improvement allows researchers to delve deeper into how consumers make decisions influenced by factors like longevity and perceived health benefits.

Purpose of the paper. The study aimed to explore the scientific literature to identify how wellness and related health dimensions influence food purchasing decision-making. Specifically, the aim is to delineate the dimensions that explain wellness and their influence on consumer decision-making.

Methodology. This work examines research related to the food decision making complex by applying the Preferred Reporting Items for Systematic Reviews (PRISMA) guidelines (Moher et al., 2015).

Figure 1: PRISMA Protocol



To achieve a comprehensive overview of the previous research in food decision making we searched on Scopus and Web of Science databases. We chose these databases for the reliability of their selection standards and their diffusion within the academic community (Singh et al., 2021). The total number of articles identified on the databases amounted to 481 articles, of which 199 on Web of Science and 282 on Scopus.

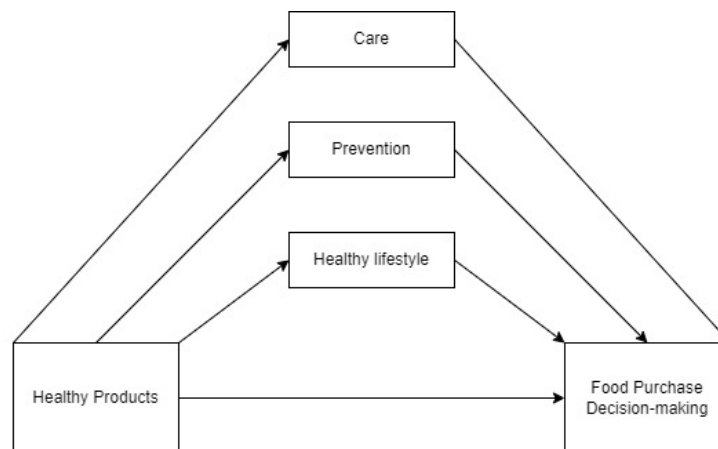
“Food decision making”, “food choice” as well as “health”, “wellness” and “wellbeing” are often used interchangeably to describe the behavior of individuals depending on the discipline in which food consumption is analyzed, and on the background of the researcher. In the initial stage of this study, we identified the most common terms by conducting preliminary searches and by evaluating references in sample articles. The search terms had to appear in the title, in the abstract, or in the keywords of the article.

To ensure that only relevant articles are included in the final analysis, we identified as exclusion criteria publication and content. Only academic peer review journals were considered. Non-academic articles, opinions, experience papers, books or book sections, and conference proceedings were excluded. Then, articles which do not focus on food decision-making, and are published out of English have been eliminated. This process resulted in the selection of a total of 85 items (Fig. 1).

Since the DONE framework (Stok et al., 2017) is an interdisciplinary approach to classifying research efforts on food decision-making, we sought to reveal relationships between disciplines. To operationalize the disciplines in which studies on food decision-making are published, we used the journal as a proxy. The scope of an individual journal was derived from the journal description on the respective website. Two researchers independently analyzed the titles, abstracts, and full texts to identify the primary results of the studies examined. In case of doubts about the classification of a publication or disagreement between researchers, categories have been added, expanded, or changed. This led to the identification of 5 categories: medicine/health sciences, psychology, marketing and consumer research, business economics, and sociology.

Results. The work is still in progress, but some reflections have already been identified. The factors that influenced consumers' decision-making can be categorized in: (i) motivations such as the desire to improve well-being (care), (ii) preventive health measures, and (iii) commitment to a healthy lifestyle. Wellness intended as "path of improvement" is achievable through food therapy. It is represented by these dimensions referring to health motivations (i; ii; iii). Scholars have investigated the connection between health and wellness (Schuster et al., 2004; Martino et al., 2017; Oliver et al., 2018). Some indicators of health, healthy lifestyle (Lucini et al., 2015), care and prevention (Pappalardo et al., 2016) can be a proxy for wellness representing its maximization (Dunn, 1959). This research hypothesizes that wellness mediate effects of products' healthy dimensions on purchase decision-making process. The independent variable (healthy dimension) refers mainly to organic products and functional foods. The mediation relationships between variables are expressed in the figure below (fig. 2). These findings are corroborated by previous studies that confirm wellness as a mediating variable in the decision-making process (Green et al., 2020; Patel & Wolfe, 2020; Choi et al., 2015) and evaluate the desire for health and wellness as an important driver in purchase decision (Kareklas et al., 2014), especially in the food market (Irene Goetzke & Spiller, 2014).

Figure 2: The Care–Prevention–Healthy lifestyle Dimensions of Wellness Mediate Food Purchase Decision-making



Care motivation refers to behaviors that improve people's physical wellness (Pappalardo et al., 2016). It thus signals the motivation of individuals with an impaired health status to take action to achieve a subsequent improved health status. The difference between this motivational type and the health-preventive type is inherent in the finding that the former may be outside of self-determined needs but is rather driven by health needs. The motivation to feel better has a significant influence on purchasing decisions (Li et al., 2014), and scientific research has investigated the relationship between dietary behavior to comply with and certain abnormal health conditions. For example, previous studies have explored reducing salt intake to combat obesity (Bolha et al., 2020), or diagnosed conditions such as diabetes led to an increased propensity to choose sugar-free and no-added-sugar labels (Albuobaid & Al-Mahish, 2022). Referring to the impact on

purchasing decisions, scholars have observed that diabetic consumers are twice as likely to purchase sugar-free and no-added-sugar labels as non-diabetic consumers (Albuobaid & Al-Mahish, 2022).

There seems to be consensus in the scientific literature that health problems influence food choice (Madeira & Goldman, 1989). Previous research (e.g., O'Brien et al., 2015) explored the role of health in consumers' decisions regarding food purchases, offering insights into how the motivation to enhance well-being influenced the selection of specific food varieties to address nutritional needs or conditions.

Conversely, preventive health motivation refers to the direct intention of consumers to engage in preventive health behaviors (Moorman & Matulich, 1993; MacInnis et al., 1991; Jayanti & Burns, 1998). Health motivation - especially in the form of a high trend towards prevention - is an important predictor of involvement in purchasing decisions and information use (Kamrath et al., 2019). For preventive reasons to health, therefore, refers to the motivation that is activated to achieve through nutrition a state of wellness that can act in advance on an abnormal state, going to prevent diseases. Previous studies have analyzed the purchase of healthier foods to increase the health and immunity of the body during the pandemic (Yusmarni et al., 2021) or the reduction of iodine for health benefits (De Melo et al., 2022), the purchase of functional foods for health support and to eliminate the risk of developing different diseases (Predanócyová et al., 2023), highlighting the influence of food safety on decision-making. Therefore, as confirmed by previous studies (e.g., Pappalardo et al., 2016), consumers would be looking for foods that have healthy characteristics that can prevent disease and improve people's physical wellness. The motivation for health translates into a preference for purchasing organic products and functional foods. The reasons why consumers buy organic products is because they believe they are better for their health (Suphaskuldamrong et al., 2021).

Healthy lifestyle refers to healthy behaviors that individuals adopt to move from an already favorable condition to an improvement condition. The prevailing orientation concerns the intention to live in a healthy way (Setiyaningrum & Batu, 2019). Research has observed a significant effect (Setiyaningrum & Batu, 2019) between the intention to live healthily and purchasing decisions. Consumers guided by a healthy lifestyle are projected towards improving and conscious food choices. This attitude leads them to food products not distinctly designated to represent certain relationships (e.g., spinach to prevent iron deficiency), but towards healthy lifestyles (Seal & Bag, 2022; Urbonavičius et al., 2010) encouraging consumers to pay attention to all the characteristics of products (e.g. proteins to improve muscle mass).

Research limitations. The lack of validation of the dimensions detected by the literature review is a limitation of this study. Therefore, the use of quantitative and qualitative methodologies will be envisaged to resolve this limit. As we used the journal as a proxy to code the disciplines, future studies could code previous research efforts according to the discipline of the study itself or according to the affiliation of the authors. This might be helpful to gain new insights into the cross-disciplinary collaboration of researchers.

Managerial implications. As consumers increasingly integrate health-related values into their decision-making, marketers must comprehend how these belief systems impact the entire consumers' experiences. Having a clearer vision of the dimensions that represent wellness has not negligible managerial implications. Based on recognized consumer segments and the motivation that arises, whether curative, preventive or improvement, consumers should receive tailored information to aid them in their decisions regarding food consumption. In addition, understanding the factors influencing the decision-making process for purchasing healthy food is valuable for manufacturers in the design and development of new and healthier food products and will guide them to properly segment their markets in terms of choice of where and how to market these products.

Originality of the paper. To the best of our knowledge, no study has attempted to synthesize the literature on food decision-making across different disciplines. The research considers the relationship between wellness nutrition and consumer decision-making, to understand how the wellness and the underlying motivations that guide him can be inserted and activated in the decision-making process by grasping the differentiations resulting from the type of motivation activated: curative, preventive, improving.

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Taste-Makers Narratives: Analyzing the Effect of Food Influencers on Home Cooks

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Framing of the research. *In the digital age, the culinary landscape has undergone a significant transformation, largely influenced by the advent of Social Media influencers in the food and dining sector. The culinary world is no longer confined to the pages of cookbooks or the walls of Michelin-starred restaurants. Instead, it has seamlessly integrated itself into the fabric of Social Media platforms, captivating audiences worldwide through the lens of food influencers (Abell & Wisbas, 2023). These individuals, armed with little more than a smartphone and a passion for food, have become the modern-day storytellers of gastronomy, captivating audiences with tantalizing images, captivating narratives, and irresistible recipes (Lee et al., 2021). From the bustling streets of Tokyo to the quaint cafes of Paris, Social Media has become the global stage where culinary delights are showcased, celebrated, and shared. Whether it is a meticulously plated dish crafted by a renowned chef or a humble home-cooked meal prepared by an everyday enthusiast, the democratization of food culture has empowered individuals to explore, experiment, and engage with cuisine in unprecedented ways (Qutteina et al., 2019). The rise of food influencers on platforms like Instagram, YouTube, and TikTok has reshaped the dynamics of the food industry, blurring the lines between consumers and creators (Coates et al., 2020; De Jans et al., 2021). These influencers, ranging from seasoned chefs to self-taught culinary enthusiasts, have leveraged Social Media to share their culinary creations, tips, and dining experiences with a global audience. This phenomenon has not only democratized gourmet culture but also blurred the traditional boundaries between consumer and producer. What began as a grassroots movement fueled by a love for food and a desire to share culinary experiences has evolved into a multimillion-dollar industry, where partnerships, sponsorships, and brand collaborations abound (De Keyzen, 2023).*

The premise of this research is to explore the extent to which Social Media influencers have impacted consumer behavior in the food industry, transforming them into “prosumers” - individuals who are not just passive consumers but also active creators, recreating influencer-endorsed recipes at home or advocating for their inclusion in restaurant menus for an enhanced dining experience (Wu et al., 2023). This study delves into the dynamics of this transformation, examining the motivations behind consumer engagement with food influencers and the consequent effects on the food and dining industry (Smaldone et al., 2021). By unraveling these motivations, the research seeks to elucidate the ripple effects on the food and dining industry, including shifts in consumer preferences, dining trends, and culinary innovation (Mainolfi et al., 2022).

Purpose of the paper. *At its core, the purpose of this paper is a quest to unravel the intricate interplay between Social Media influencers and the food industry, understanding the implications of this symbiotic relationship on consumer behavior, dining trends, and culinary culture at large (Kei, 2024).*

Through several methodologies and data-driven insights, our aim is twofold: first, to dissect the mechanisms through which food influencers wield influence over their audiences, deciphering the underlying motivations, narratives, and emotional triggers that drive consumer engagement with influencer-generated content (Barusman & Suwandi, 2020). By peeling back the layers of Social Media discourse, we seek to uncover the hidden patterns and trends that shape consumer preferences, behaviors, and perceptions in the realm of food (Packer et al., 2022). Second, we endeavor to contextualize our findings within the broader socio-economic scenario, probing the ripple effects of influencer culture on the food industry and trends (Folkvord et al., 2020). By examining the impact of influencer endorsements on consumers, the transformative potential of influencer-driven dining preferences on restaurant menus, and the catalytic role of influencers in fostering culinary innovation and diversity, we aim to provide stakeholders with actionable insights to navigate the evolving landscape of food marketing and consumer engagement.

In essence, this paper serves as an exploration of the food influencers universe in the digital noise, offering a nuanced understanding of the dynamics at play in the realm of food influencer marketing (Campbell & Farrell, 2020). By shedding light on the opportunities, challenges, and ethical considerations inherent in this burgeoning phenomenon, we aspire to equip scholars, practitioners, and policymakers alike with the knowledge and foresight needed to harness the transformative potential of Social Media influencers for the food industry and society at large.

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Methodology. Amidst this cultural shift, it becomes imperative to explore the multifaceted impact of food influencers on consumer behavior and the broader food and dining landscape. This research endeavors to delve deep into the nuances of this phenomenon, employing a multifaceted approach that combines text mining, topic modeling, sentiment analysis, and predictive analytics (Tanwar et al., 2022). By harnessing the knowledge derived of data extracted from Social Media platforms, particularly Instagram, this study seeks to unravel the motivations behind consumer engagement with food influencers. Data were retrieved from profiles of two eminent food influencers (Chopra et al., 2018). Through text mining techniques, we aim to decipher the underlying themes, trends, and sentiments prevalent in influencer-generated content, shedding light on the factors that drive consumer preferences and behaviors in the realm of food (Aggarwal & Zhai, 2012).

Notwithstanding, employing topic modeling methodologies will allow us to identify key themes and topics that resonate with audiences, providing insights into the evolving trends and narratives shaping the culinary discourse on Social Media (Gupta & Lehal, 2009). Coupled with sentiment analysis, which discerns the emotional tone and reactions associated with influencer content, we can gain a comprehensive understanding of the consumer sentiment towards different culinary experiences, cuisines, and food products endorsed by influencers. Furthermore, by leveraging predictive analytics, this research aims to forecast future trends and developments in the food industry, informed by the evolving preferences and behaviors of consumers influenced by Social Media influencers. By extrapolating patterns and correlations from historical data, we can anticipate shifts in consumer demand, dining preferences, and market dynamics, thereby empowering stakeholders in the food industry to adapt and innovate in response to emerging trends (Schoenherr & Speier-Pero, 2015).

In essence, this research endeavors to unravel the intricate web of influence woven by food influencers on Social Media platforms, elucidating the transformative impact they wield on consumer behavior, dining trends, and the broader culinary landscape (Storey & Song, 2017). Through empirical analysis and data-driven insights, we aim to understand the pathways through which Social Media influencers shape the way we eat, cook, and experience food in the digital age.

Results. The research analyzed corpora from the two selected food influencers via text analysis, designed to investigate the corpus frequencies via stylometry and frequency count. To assess the weight of term frequencies (tf), and then perform several big data techniques, as described in the Methodology.

Results from text mining revealed several differences and similarities between both the influencers' profiles. In particular, differences were found in the commented recipes and items, and similarities were found in terms of engagement and intentions. Primary text entities concerning the first influencer were: happy birthday (tf = 7164), bsk burger (tf = 4284), lamb sauce (tf = 3394), merry Christmas (tf = 2672), looks good (tf = 2546), looks amazing (tf=2543), gnocchi pasta (tf=2477), beef wellington (tf=2424), idiot sandwich (tf=2296), pizza dough (tf=1983), and baked salmon (tf=1849). The most frequent terms in the corpus of the second influencer were the following: looks delicious (tf = 47336), great idea (tf = 44571), looks amazing (tf = 40152), mashed potatoes (tf = 31217), gluten free (tf = 27583), find recipe (tf = 27583), lentil soup (tf = 27583), pasta recipe (tf = 27583), chocolate cookies (tf = 27583), banana bread (tf = 27583), and thanksgiving special (tf = 27583). Concerning Topic Modeling, text entities were clustered in four groups.

Topics for the first influencer were the following: (a) *Gourmet Creations*: this topic encompasses sophisticated dishes such as "bsk burger," "lamb sauce," and "beef wellington," reflecting the influencer's focus on elevated culinary experiences. (b) *Festive Celebrations*: terms like "happy birthday" and "merry Christmas" dominate in the topic, indicating content centered around special occasions and seasonal festivities. (c) *Visual Appeal*: Expressions like "looks good" and "looks amazing" suggest a strong emphasis on visual presentation and aesthetic appeal in the influencer's posts. (d) *Diverse Palates*: This topic includes mentions of a variety of dishes, from "gnocchi pasta" to "pizza dough" and "baked salmon," showcasing the influencer's versatility in culinary exploration.

The second influencer revealed the following topics: (a) *Sensory Delights*: Terms like "looks delicious" and "great idea" indicate a focus on enticing and appetizing visuals, appealing to the senses of the audience. (b) *Comfort Cuisine*: This topic revolves around comforting dishes like "mashed potatoes," "chocolate cookies," and "banana bread," evoking feelings of warmth and nostalgia. (c) *Dietary Diversity*: With mentions of "gluten-free" and "lentil soup," this topic highlights the influencer's commitment to catering to diverse dietary preferences and lifestyles. (d) *Seasonal Specialties*: Terms such as "thanksgiving special" suggest a thematic focus on seasonal and holiday-inspired recipes, resonating with the audience's culinary traditions and celebrations.

Focusing on sentiment analysis, results show that in the first corpus 86% of comments were positive, 10% were neutral, and 4% were negative. In the second corpus comments were 92% positive, 4% neutral, and 4% negative.

The results from the text mining analysis offer valuable insights into the distinctive profiles of the two influencers under scrutiny. Notably, differences were observed in the types of recipes and items frequently mentioned by each influencer, while similarities emerged in terms of audience engagement and underlying intentions. For the first influencer, primary text entities revolved around specific dishes such as "bsk burger," "lamb sauce," and "beef wellington," alongside common expressions like "happy birthday" and "merry Christmas.". Conversely, the second influencer's corpus featured prevalent terms like "looks delicious," "great idea," and "mashed potatoes," indicative of a different culinary focus. For the first influencer, the emphasis seemed to be on gourmet creations, festive celebrations, visual appeal, and diverse palates, reflecting a multifaceted approach to culinary content creation. The second influencer's topics centered around sensory delights, comfort cuisine, dietary diversity, and seasonal specialties, highlighting a focus on appealing to diverse sensory experiences and catering to varied dietary preferences. Despite these variances, sentiment analysis revealed overwhelmingly positive feedback for both influencers, underscoring the effectiveness of their content in resonating with their respective audiences.

Research limitations. *Considering the complexities of food influencer effects, it is essential to acknowledge the inherent limitations that shape the scope and breadth of our research endeavor.*

First and foremost, while Social Media platforms like Instagram offer a rich repository of data ripe for analysis, it is important to recognize the inherent biases and limitations inherent in such datasets. The algorithms governing content visibility and engagement on these platforms may skew our analysis towards content that is more popular or algorithmically favored, potentially overlooking niche or marginalized voices within the influencer community.

Additionally, the nature of Social Media discourse is inherently dynamic and ephemeral, subject to rapid shifts in trends, narratives, and audience preferences. As such, our analysis may capture only a snapshot of the ever-evolving landscape of food influencer culture, potentially missing out on emerging trends or nuances that may have profound implications for our understanding of consumer behavior and industry dynamics.

Nevertheless, the methodologies employed in this research, including text mining, topic modeling, sentiment analysis, and predictive analytics, are not without their limitations. While these techniques offer powerful tools for extracting insights from large-scale datasets, they are not immune to errors, biases, or misinterpretations. As such, our findings should be interpreted with caution, recognizing the inherent uncertainties and limitations inherent in the analytical process. Our research is inherently limited by the availability and quality of data accessible to us. Efforts have been made to collect and analyze data from a diverse range of sources, including influencer-generated content, consumer feedback, and market trends, it is possible that certain data points may be missing or incomplete, potentially limiting the depth and accuracy of our analysis.

Finally, it is important to acknowledge the broader socio-cultural context within which our research is situated. Influencer culture is deeply intertwined with broader trends in consumerism, digital media, and celebrity culture, making it challenging to disentangle the unique impact of influencers on consumer behavior from the myriad other factors at play. As such, while our research endeavors to shed light on the transformative power of food influencers, it is but one piece of a much larger puzzle, leaving ample room for further exploration and inquiry.

Managerial implications. *Within the landscape of food influencer culture, our research unveils profound managerial implications that warrant strategic consideration and thoughtful implementation by stakeholders across the food industry. The influence of Social Media influencers in the food and dining sector signifies a shift towards a more engaged and participatory culinary culture, where consumers are empowered to become creators. This transformation has profound implications for consumer behavior, dining trends, and the culinary industry at large. As this trend continues to evolve, further research is needed to understand its long-term impacts on the food landscape and consumer identities as prosumers. Primarily, our findings underscore the pivotal agency wielded by influencers in shaping consumer preferences and behaviors within the contemporary digital milieu. For food brands and culinary enterprises, this implication constitutes a compelling imperative to harness influencer partnerships as strategic instruments for brand propagation, product endorsement, and audience engagement. By discerning influencers whose ethos and aesthetic resonate harmoniously with their brand identity, companies can efficaciously magnify their outreach and resonance among target demographics, thereby fostering brand allegiance and propelling sales figures.*

In specie, our insights furnish actionable intelligence for strategic deliberation in the domains of product innovation and promotional endeavors. By discerning the salient themes, trends, and affective tonalities prevalent within influencer-generated content, brands can adeptly tailor their product portfolios and promotional initiatives to align seamlessly with consumer predilections and cultural zeitgeist. Whether it entails capitalizing upon emergent culinary vogues endorsed by influencers or aligning brand messaging with the aspirational ideals championed by prominent influencers, enterprises stand to gain a competitive edge by attuning themselves to the evolving contours of influencer discourse.

Besides, our research underscores the exigency of authenticity, transparency, and ethical rectitude in the realm of influencer-brand collaborations. As contemporary consumers grow increasingly discerning and skeptical of contrived promotional content, brands are impelled to prioritize authentic, substantive partnerships with influencers who embody their brand ethos organically. By cultivating genuine connections and narratives that resonate authentically with audiences on an intimate level, brands can engender trust, credibility, and enduring loyalty amidst an era beset by digital clamor and commercial commodification. Additionally, our findings accentuate the latent potential of influencer marketing to engender tangible impacts for enterprises ensconced within the gastronomic landscape. Considering the latest trends, through judicious utilization of hyper-local influencers espousing the virtues of neighborhood gastronomic establishments and artisanal purveyors, small-scale enterprises could expand their sphere of influence and draw fresh patronage within an increasingly competitive marketplace milieu. Furthermore, collaborative initiatives between influencers and local businesses can evoke a sense of communal camaraderie and cultural verisimilitude, thereby enriching the gastronomic experience for consumers and fortifying the economic vitality of ecosystems.

In sum, our research serves as a clarion call to action, accentuating the transformative potential inherent within the nexus of food influencers and brand engagement. By embracing the strategic imperatives and negotiating the attendant challenges embedded within influencer culture, enterprises stand poised to unlock novel pathways for growth, innovation, and market differentiation amidst the tumultuous terrain of the digital epoch.

Originality of the paper. *Considering the burgeoning discourse surrounding Social Media influencers and their implications on consumer behavior, our research distinguishes itself through methodological complexity and conceptual innovation in unpacking the nuanced dynamics of food influencer culture.*

Primarily, our study adopts an integrative analytical framework encompassing text mining, topic modeling, sentiment analysis, and predictive analytics to elucidate the multifaceted facets of influencer-mediated consumer behavior within the culinary domain. By synthesizing these disparate methodologies, we endeavor to furnish a nuanced comprehension of the underlying motivations, trends, and affective dimensions pervading influencer-generated content, thereby elucidating the mechanisms through which influencers exert influence over consumer preferences and gastronomic trends. Thus, our research contributes to the extant scholarly discourse by contextualizing the phenomenon of food influencer culture within the broader socio-economic milieu, interrogating its ramifications for local enterprises, culinary innovation, and ethical consumption paradigms. Through an examination of the repercussions of influencer endorsements on consumers and the transformative potential of influencer-driven gastronomic trends on industry dynamics, our study proffers novel insights into the manifold ways in which influencers shape the gastronomic landscape.

Specifically, our inquiry extends beyond empirical observations to enrich theoretical frameworks pertaining to consumer behavior in the digital epoch, delineating the concept of “prosumerism” - wherein consumers transcend their passive role as mere recipients of influencer content to actively participate in the creation and dissemination of culinary experiences. Through a fusion of empirical inquiry and theoretical synthesis, we aspire to illuminate the transformative implications of this paradigm shift towards prosumerism for consumer identities, industry paradigms, and broader socio-cultural narratives.

Concluding, our research offers seminal contributions to the scholarly discourse surrounding the transformative agency of food influencers within the contemporary gastronomic landscape. By embracing innovative methodologies and conceptual frameworks, we endeavor to push the frontiers of scholarly inquiry and engender a deeper understanding of the intricate interplay between digital media, consumer behavior, and culinary culture.

Keywords: Digital Marketing; Influencer Marketing; Prosumers; Sentiment Analysis; Text Mining.

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Building a Better Future: The University Activism for Societal Wellbeing

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Framing of the research. *Our society is very much in crisis and is addressing complex, urgent, and deeply polarized social challenges (Podnar and Golob, 2024; Weber et al., 2023). Climate change, immigration, discrimination, health disparities, access to education, the gender gap, persistent poverty in certain regions, police violence, civil rights, ongoing conflicts like the Russia-Ukraine war (D'Arco et al., 2023), Israel-Palestine, and the increasing geopolitical tensions are issues that deeply concern public opinion. These challenges contribute to a fragmented and discordant public sentiment (Vredenburg et al., 2020), heightening individuals' susceptibility.*

Governments appear either disinterested or incapable of effectively addressing these issues (Radanielina Hita and Grégoire, 2023) and the goals of the Agenda 2030 seem increasingly distant and difficult to achieve. Consequently, new players have emerged on the scene, such as activist brands. However, they encounter troubles (Bhagwat et al., 2020) linked to the fact that consumers usually perceive brand activism as a mere marketing ploy to increase their sales and power (Mirzaei et al., 2022), leading to a phenomenon known as "woke-washing" (Sobande, 2019).

In this scenario, new activists seem to emerge who act differently and pursue high-social purposes. Universities are stepping into the forefront as pivotal agents of social change, leveraging their long-standing influence as beacons of knowledge, ethics, and societal norms by exploiting their highly specialized skills and expertise (Eschle, 2006). Transitioning beyond traditional roles of social responsibility, universities are beginning to adopt activist stances to drive societal transformation (Barnett, 2021), akin to brands in the corporate world that engage in activism. This shift sees universities not just as places of learning but as active participants in addressing societal issues, effectively becoming living laboratories for social good (Choudry, 2020).

Drawing parallels with the concept of brand activism (Sarkar and Kotler, 2020), universities are applying similar strategies to fulfill societal needs. Just like corporations have used "brand activism" (Ahmad et al., 2024; Andersen and Johansen, 2024; Mukherjee and Althuizen, 2020) to address and influence socio-political issues, universities are now harnessing their intellectual resources, research capabilities, and community connections to engage in and promote social activism. This includes taking public stances on controversial issues, engaging in policy advocacy, and implementing programs that drive change in the society (Wannow et al., 2023; Bhagwat et al., 2020).

Given the main goal of the activist strategy, which aims to bring about social change by influencing the intentions, attitudes, and behaviors of stakeholders (Eilert and Nappier Cherup, 2020), universities also appear to employ the public engagement strategy to actively involve stakeholders in addressing significant these issues on a broader scale.

Engagement is a strategic approach designed to interact, listen, and actively involve stakeholders on emotional, cognitive, and ultimately behavioral levels (Hollingshead et al., 2018). Universities frequently employ this strategy to address their increasingly relevant "Third Mission". Nowadays, universities seem to incorporate activist goals into their dynamic public engagement systems as useful tools to implement their social role (Lo Presti et al., 2023). In fact, they not only spend themselves on social, environmental, political, and economic issues but also use university public engagement systems in order to engage students, faculty, staff, the local community, businesses, non-governmental organizations (NGOs), and government institutions (Hart and Northmore, 2011).

Furthermore, the activist strategy is intrinsically public and needs to be communicated through every visible means (Korschun, 2021). Considering the paramount significance of institutional communication for universities, it emerges as a fitting channel to convey activist efforts. University websites, in particular, serve as crucial platforms for communicating the institution's identity, objectives, mission, goals, and updates (Marino and Lo Presti, 2020; Steiner et al., 2013). Moreover, institutional communication stands out as a powerful engagement factor for higher education institutions (Rodríguez-Gómez et al., 2022). By leveraging their online presence in this manner, universities not only enhance their stakeholder engagement but also solidify their standing and reputation as influential agents of social change. This evolution underscores the significant role that online communication plays in higher education today, reflecting a broader

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shift towards a more engaged, proactive university model that actively contributes to societal discourse and transformation (Foroudi et al., 2020).

Purpose of the paper. This study is grounded in two pivotal strands of literature that have garnered considerable attention from both researchers and practitioners: “brand activism” and “public engagement”. It aims to first understand whether or not activism is implemented by universities; second, to map and identify its pillars and key factors; and finally, to provide a first definition of university activism. This research analyzes the emerging phenomenon of activist universities, underlining how high education institutions are evolving their role and becoming increasingly catalysts for social good by implementing engagement and activism strategies. Therefore, based on the study’s main purpose of defining university activism and mapping its pillars, the following research questions guided our analysis:

Rq₁. Are universities starting to act as activists in driving social change?

Rq₂. How do universities engage in activism to impact the common good?

Rq₃. How do universities communicate these efforts?

Rq₄. Finally, how can university activism be defined?

Methodology. This research adopts a qualitative by utilizing multiple case studies (Fuchs and Robinson, 2023; Yin, 2009; Eisenhardt, 1989); thus, 30 websites of high-ranked American universities were analyzed. Based on the purpose of this study and the research questions, we have deemed the analysis of university websites as the most suitable method for comprehending how universities participate in activism and utilize institutional communication to disseminate it while engaging stakeholders. Institutional websites serve as a direct link between universities and their stakeholders (Lo Presti and Marino, 2020), rendering them indispensable for content analysis in this context.

Moreover, we focused the analysis on the American context since it presents a strongly polarized society and a historical role as the birthplace of significant social movements, profound struggles, and activism. Notably, brand activism itself originated in the American context, and a substantial portion of the research in this field is conducted within the United States (Cammarota et al., 2022).

Data collection involved systematically categorizing information into an Excel matrix, structured around the research questions and study purpose. The researchers applied a funnel approach, starting with the evaluation of university homepages and progressing to deeper levels to obtain a comprehensive understanding (Krippendorff, 2013). The analysis of the university sample underwent two rounds of examination by the researchers to enhance the reliability and robustness of the data collection process, ensuring thoroughness and accuracy.

Content analysis was performed for data analysis (Hsieh and Shannon, 2005), drawing inspiration from the “4W of Brand Activism” framework (Cammarota et al., 2023). Coding principles guided data analysis following Saldana (2013). Researchers conducted independent data analysis (Wang et al., 2021). Subsequently, the coding process underwent thorough examination and discussion to detect any mistakes. The results were then deliberated within group discussions for comprehensive evaluation.

Results. The findings show intriguing insights that serve as a foundation for developing the concept of university activism by providing some foundational pillars and a primary definition of university activism. Firstly, the universities under scrutiny exhibit varying degrees of involvement in activist actions, revealing a phenomenon that is prevalent in practice yet remains underdeveloped in the existing literature. Our first investigation allows for the identification of critical aspects and key factors of this new phenomenon (Rq₁).

Secondly, results show that universities undertake diverse activist endeavors to contribute to societal well-being and involve their stakeholders in these efforts. Specifically, they utilize education and research to “disseminate” knowledge and raise awareness of controversial issues. Furthermore, universities actively “promote” their initiatives through various means such as celebrations, memorial days, or training sessions on social matters, intending to engage stakeholders on cognitive, emotional, and behavioral levels. Ultimately, they seek to “push” concrete actions among stakeholders through avenues like donations, volunteering, and other socially impactful activities (Rq₂).

Thirdly, findings highlight that universities strongly communicate their activist efforts through the university’s official website, social media platforms, and other relevant channels (Rq₃).

Lastly, to fulfil the purpose of this study, we provide a first definition of university activism based on the obtained results. Specifically, university activism is “a strategy to act on contentious socio-political, economic, and environmental challenges through disseminating, promoting, and pushing actions, all publicly declared aimed at engaging stakeholders in social change” (Rq₄).

The universities analyzed allowed us to highlight the pillars, practices and aims of university activism. For instance, “The Pace Center for Civic Engagement” at “Princeton University” exemplifies university activism by recognizing and promotes a broad spectrum of university advocacy organizations. These groups, ranging from those advocating for prison education reform to those focused on social entrepreneurship and healthcare equity, tackle a variety of important societal issues. The recognition process ensures these organizations receive the sponsorship needed to move their ideas into actionable outcomes. Similarly, the “Washington University” has established an “Activism” section within its academic offerings, dedicating resources to research and study across departments like Ethnic Studies, Gender Studies, and Law, Societies, and Justice. This approach not only facilitates student involvement in activism but also integrates these disseminating efforts into the university’s academic framework, further emphasizing the role of educational institutions in societal change.

Expanding upon the collaborative landscape of university activism, these institutions are not only nurturing vibrant internal communities such as centers and affinity groups dedicated to social change but are also proactively seeking

external alliances that enhance their impact on societal challenges. Through forging strategic partnerships with a spectrum of organizations ranging from local community groups and NGOs to industry leaders and innovative startups, universities amplify the reach and effectiveness of their activism. These collaborations enable a unified approach to addressing the multifaceted nature of today's societal issues, leveraging shared resources, expertise, and networks.

For instance, "Massachusetts Institute of Technology" (MIT) through its "MIT Solve initiative", collaborates with technologists, social entrepreneurs, and policymakers to address global challenges. This platform exemplifies how universities can serve as hubs for innovation, bringing together diverse actors to work on sustainable urban environments and other pressing issues.

The ecosystem of involved actors in these partnerships is diverse, bringing together a dynamic assembly of academic staff, students, alumni, and various external stakeholders. From this perspective, the "University of California, Berkeley" (UC Berkeley), through its "Berkeley Food Institute", exemplifies university-led activism by partnering with community organizations and local governments to transform the food system. Focused on sustainable agriculture, food equity, and community health, the initiative engages in research, policy advocacy, and community projects to improve food access and promote sustainable practices. By connecting local farmers with food banks and schools, and advocating for policies supporting food safety, labor rights, and environmental sustainability, UC Berkeley demonstrates how universities can act as powerful agents of social change, advocating and pushing for a more equitable and sustainable food system.

This collective effort fosters a rich tapestry of perspectives and strategies, driving forward initiatives that are inclusive and impactful. The target audience of these collaborative ventures extends beyond the immediate university community, aiming to engage prospective students, policymakers, industry partners, and the broader public. Such inclusivity ensures that the activism spearheaded by universities resonates across multiple spheres of society, engaging a wide range of participants in dialogue and action. These partnerships not only enhance the capacity for social change but also position universities as pivotal nodes within a larger network of societal transformation, where the convergence of education, innovation, and activism ignites progressive developments across communities and beyond.

Research limitations. This study has some limitations that can serve as avenues for future research. First, this study was confined to the United States, with an analysis focused on 30 highly ranked universities. Consequently, more research is needed including other countries and universities. This expansion is essential to validate, confirm, and generalize the results obtained, ensuring a more comprehensive understanding of the phenomenon.

Second, this study exclusively concentrates on websites, overlooking the fact that activism is predominantly executed through social media platforms. Therefore, future research should explore whether and how universities communicate their activist initiatives specifically on social media, examining the nuances and strategies employed in this digital space. Third, it is required to gain a nuanced understanding of the actions undertaken by activist universities, particularly mapping their execution, the involved stakeholders, and the specific target audience they aim to address.

Fourth, there is a crucial need to comprehend the outcomes of university activism, both in terms of its impact on the institution itself and its influence on civil society.

Finally, the construct of university activism should be fortified through additional research, coupled with the application of appropriate quantitative methods for operationalization.

Managerial implications. The present study has both theoretical and managerial implications. From a literature standpoint, this study not only identifies but also "labels" a novel phenomenon. It offers a first definition, highlighting crucial aspects and key elements that characterize it. Consequently, it establishes itself as a guiding reference for researchers to address future studies on this unexplored phenomenon.

Instead, from a managerial perspective, this study stresses the central role that universities can play in instigating social change, presenting an overlooked perspective for practitioners. While the phenomenon is undoubtedly gaining traction in the United States, it remains relatively obscure to the general public and other institutions.

Thus, this article is a "warning" for practitioners by offering them the best practices to implement in universities to address societal change and engage in activism. Additionally, insights are provided to effectively conduct efforts, enhancing universities' roles as catalysts for social transformation.

The relevance of strategic communication is stressed to obtain stakeholder engagement. Moreover, the study highlights the importance of building partnerships with local communities, non-profit organizations, and other educational institutions to amplify the impact of activism efforts. Such collaborations can enhance the university's ability to address complex social issues effectively and sustainably. Moreover, this study highlights the crucial role of universities in civil society, offering valuable insights for policymakers.

Originality of the paper. Grounded in two relevant and strongly interesting literature fields - public engagement and brand activism - this research seems to be pioneering in its investigation of university activism. To the best of our knowledge, this is the first study to intercept a phenomenon already in progress but not yet understood within the scholarly community.

Thus, the present research identifies university activism as a new social role for higher education, aimed to drive social change. By providing a first definition of university activism and identifying its key factors, this research lays the groundwork for a deeper understanding of this evolving phenomenon and posit itself as a practical guide for both future researchers and universities seeking to understand and implement this novel strategy.

Key words. university activism, social change, content analysis, strategic communication, institutional websites

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L'integrazione del Metaverso negli eventi: impatto sugli SDG's e prospettive future

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Abstract

L'articolo esplora le molteplici implicazioni dell'integrazione degli strumenti digitali e del metaverso negli eventi, con un focus specifico sul caso del Phygital Sustainability Expo. Il metaverso, rappresentando un'evoluzione innovativa di Internet, ha un notevole potenziale per promuovere gli Obiettivi di Sviluppo Sostenibile (SDG's) in diversi settori. Attraverso un'osservazione basata sull'analisi della letteratura, questa ricerca analizza l'impatto dell'utilizzo del metaverso negli eventi sugli Obiettivi di Sviluppo Sostenibile (SDG's), incluse le partnership, l'educazione inclusiva e le azioni per mitigare l'impatto climatico. Inoltre, viene utilizzato un approccio predittivo mediante interpolazione lineare, per misurare quanto l'utilizzo di tool digitali e del metaverso possano influenzare l'entità dell'evento in futuro. I risultati contribuiscono a colmare le lacune nel dibattito accademico attuale riguardo all'intersezione del metaverso con la sostenibilità, offrendo spunti pratici per le imprese che si muovono in questo mondo ancora in evoluzione.

Key words: Metaverso; SDG; Eventi; Moda

Framing of the research. Il metaverso rappresenta una vasta rete interattiva di mondi virtualizzati tridimensionali in tempo reale. Facilita l'interazione simultanea e duratura di un numero infinito di utenti, contraddistinta da una sensazione personale di presenza e da flussi continui di dati, che comprendono identità, storie, diritti, oggetti, comunicazioni e transazioni finanziarie (Ball, 2022). Questa tecnologia rappresenta una nuova iterazione di Internet che incorpora visori di realtà virtuale (VR), tecnologia blockchain e avatar volti ad integrare il mondo fisico e quello virtuale (Lee et al., 2021). Inoltre, questo mondo virtuale rappresenta un mercato in forte espansione. In particolare, l'analisi elaborata da Stata, indica una notevole traiettoria di crescita per il mercato del metaverso, proiettando un valore di 74,4 miliardi di dollari nel 2024 e un tasso di crescita annuale previsto (CAGR 2024-2030) del 37,73%. Questa traiettoria è prevista culminare in un volume di mercato previsto di 507,8 miliardi di dollari entro il 2030 (STATA, 2023).

Alla luce del forte impatto che il metaverso ha apportato, la ricerca contemporanea, si sta concentrando sempre di più su di esso (Jauhiainen et al., 2022). Ad esempio, l'integrazione del metaverso nelle esperienze di shopping rappresenta una tendenza attuale nell'ambito della ricerca. I rivenditori stanno impiegando tecnologie avanzate, quali la realtà virtuale (VR), la realtà aumentata (AR) e la blockchain, per creare ambienti di shopping immersivi e interattivi. Queste soluzioni tecnologiche consentono ai consumatori di effettuare acquisti comodamente da casa o dall'ufficio, esplorando negozi virtuali attraverso l'uso di smartphone (Cannavo & Lamberti, 2020). Inoltre, grazie alla loro presenza nel metaverso, i rivenditori hanno la possibilità di entrare in possesso di informazioni sensibili sui clienti che risultano inaccessibili su altre piattaforme digitali (Vittorio, 2022), ciò consentirebbe di raggiungere un livello di personalizzazione dei prodotti che, conseguentemente, porterebbe ad un cambio di paradigma. È plausibile che nel prossimo futuro si verifichi un cambio paradigmatico, con il passaggio da un modello di "shop then ship" a uno di "ship then shop" (Choi et al. 2021), reso possibile grazie all'utilizzo di algoritmi avanzati in grado di interpretare con sempre maggiore precisione i bisogni e i desideri dei consumatori (Agrawal et al., 2018). Il metaverso, dunque, apre le porte alla personalizzazione delle esperienze dei clienti, tale caratteristica consente agli individui di modellare le loro esperienze in modo unico e coinvolgente, contribuendo a costruire connessioni più profonde con l'ambiente virtuale e con altri utenti (Dincelli, 2022; Le Tan et al., 2023). Questa modalità di acquisto si distingue per la sua sofisticata interattività e personalizzazione, offrendo un'esperienza immersiva senza precedenti. Tale interattività non solo rinforza il legame tra cliente e brand (Yoo et al, 2023), ma, inoltre, i commercianti possono capitalizzare sulla dimensione spaziale del metaverso, operando contemporaneamente in tre ambienti distinti, con potenziali benefici nella riduzione della dipendenza dai negozi fisici e dei relativi costi associati (Bourlakis et al., 2023). Attualmente, la ricerca presenta una

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lacuna in questo campo che, dato il cambio di paradigma e i molteplici benefici, meriterebbe un'attenzione più approfondita.

Numerose indagini accademiche, invece, si sono immerse nelle opportunità offerte dal Metaverso nel mitigare gli impatti ambientali e favorire la sostenibilità. Ad esempio, la tecnologia blockchain è identificata come fondamentale per affrontare le sfide legate al commercio, sebbene con il rischio di un notevole consumo energetico (De Giovanni, 2023). Nonostante ciò, viene sottolineato il potenziale trasformativo della tecnologia del Metaverso, suggerendo che esso ricopra un ruolo significativo nell'accelerare il raggiungimento degli Obiettivi di Sviluppo Sostenibile (Cao et al., 2023). La capacità distintiva del Metaverso di stabilire un'interconnessione senza soluzione di continuità tra la vita reale e virtuale emerge come un catalizzatore per ridurre il consumo di risorse nella produzione di beni e prodotti (Allam, 2022). Inoltre, esso permette di ridurre le attività quotidiane che richiedono l'utilizzo di mezzi di trasporto (Kshetri, 2023), e di minimizzare il consumo di energia negli edifici adibiti ad uffici (Vlăduțescu et al., 2023; Al-Emran, 2023).

Pertanto, il Metaverso, come spazio digitale in crescita, offre un'opportunità distintiva di allinearsi agli Obiettivi di Sviluppo Sostenibile, che risulta particolarmente evidente nel campo degli eventi. Questa tecnologia aiuta gli organizzatori di eventi a seguire linee guida aziendali, sociali ed ambientali, riducendo le emissioni di carbonio legate ai viaggi e al catering, promuovendo l'educazione ambientale, la consapevolezza e un comportamento responsabile (Kark & Singh, 2023). Inoltre, gli eventi nel Metaverso vanno oltre le tipiche riunioni virtuali, evolvendosi in occasioni curate su piattaforme dedicate. Questo cambiamento trasformativo, che si discosta dagli eventi virtuali tradizionali, mostra una forte capacità di offrire esperienze sempre più coinvolgenti (Piccioni, 2023). Anche le tecnologie della moda e del retail stanno avanzando in un'ottica sempre più digitale, coinvolgendo i consumatori attraverso il metaverso dando vita ad un ambiente commerciale omnicanale (Weiss, 2022). Anche i marchi di moda stanno sfruttando questi sviluppi per ospitare le proprie sfilate all'interno del metaverso, presentando così i loro design ad un pubblico globale (Mu et al., 2023). Nel 2022, nel periodo post pandemico, i grandi brand globali della moda hanno partecipato alla Metaverse Fashion week organizzata in collaborazione con Decentraland (STATA, 2022). Questo spostamento verso il mondo virtuale però non rappresenta solo una risposta alla pandemia, ma è una tendenza in continua evoluzione. Dopo la pandemia, infatti, le tradizionali settimane della moda si stanno trasformando in settimane della moda digitali, con un impatto significativo sulla portata del pubblico, sui costi operativi e sull'interazione con i consumatori (Dai, 2023). Di fatto, l'applicazione della tecnologia del metaverso risulta particolarmente rilevante nell'industria della moda, dove il raggiungimento della sostenibilità richiede una profonda trasformazione digitale (Periyasamy & Periyasami, 2023). Infatti, questo settore contribuisce significativamente alle sfide ambientali, rappresentando il secondo settore maggiormente inquinante globale dopo l'industria petrolifera, portando a varie conseguenze ambientali negative (Gupta et al., 2022; Raj et al., 2022). L'influenza di tale industria si estende su diversi settori, influenzando in modo significativo i diritti umani, le emissioni di carbonio, il consumo di acqua, l'inquinamento e le disuguaglianze di genere (Ali et al., 2022). Le sfilate di moda svolte nel metaverso migliorano l'accessibilità globale, eliminano i costi legati agli eventi fisici e contribuiscono alla sostenibilità riducendo le impronte di carbonio (Dewalska-Opitek, 2023). Ciò sottolinea la crescente importanza del metaverso come forza trasformativa, in particolare nel settore della moda, allineandosi con gli obiettivi più ampi di sostenibilità.

Purpose of the paper. Gli avanzamenti del metaverso enfatizzano l'importanza di integrare la sostenibilità e la responsabilità ma la discussione accademica in questo campo rimane incompleta (Jauhainen et al., 2022). L'attuale conversazione accademica manca di approfondimenti esaustivi sulle conseguenze ambientali del consumo virtuale sia in positivo, che in negativo (Pellegrino et al., 2023). Inoltre, la comprensione accademica del metaverso nel contesto della moda rimane ambigua, indicando una lacuna nella comprensione accademica (Lee et al., 2022).

Tale ricerca mira a colmare questo gap. Attraverso un esame dell'aspetto online Phygital Sustainability Expo, il nostro studio cerca di scoprire approfondimenti legati agli effetti e alla rilevanza dell'uso del metaverso come strumento per eventi digitali, con un focus specifico sulla sostenibilità. Adottando questo approccio, il nostro studio mira non solo a contribuire alla discussione specifica sul Metaverso, ma anche a migliorare la comprensione accademica più ampia delle varie implicazioni degli eventi digitali in contesti diversi. Per raggiungere questo obiettivo, sono state formulate due domande di ricerca:

RQ 1: Come l'uso del metaverso negli eventi influisce sul raggiungimento degli SDG's?

RQ 2: Quanto influisce l'uso di strumenti digitali e del metaverso sul numero di partecipanti, e quanto influenzerà in futuro?

Methodology. Nella fase iniziale, viene esaminata la letteratura per chiarire le implicazioni del metaverso negli eventi sugli Obiettivi di Sviluppo Sostenibile (SDGs) attraverso un'osservazione concettuale (Joseph, 2023). Lo studio analizza la letteratura per comprendere l'impatto degli eventi su specifici SDGs e valutare il contributo potenziale del metaverso al loro raggiungimento.

Inoltre, questo lavoro adotta un approccio focalizzato, concentrando l'analisi su un singolo case study con lo scopo approfondire le complessità di una specifica problematica in contesti distinti (Sandars, 2021). L'attenzione è rivolta al "Phygital Sustainability Expo," una rilevante esposizione sulla sostenibilità nel settore della moda e del design, attualmente alla sua quarta edizione nel 2023 presso i Fori Imperiali di Roma.

Tab. 1: elaborazione degli autori sulla base dei dati forniti dalla Sustainable Fashion Innovation Society

REACH RECAP - PHIGITAL SUSTAINABILITY EXPO 2023				
REACH TOTALE	70.000.000	ONLINE	43.000.000	80%
		OFFLINE	27.000.000	20%

Al fine di comprendere l'impatto che l'uso del digitale e del metaverso ha avuto e avrà in futuro sul numero di partecipanti all'evento preso in esame, è stata svolta una previsione mediante interpolazione lineare. Il meccanismo predittivo dell'interpolazione lineare si basa sul principio di utilizzare i valori associati ai punti dati noti per estrapolare e stimare il valore corrispondente a un punto dati sconosciuto (Pownuk & Kreinovich, 2017). La sequenza procedurale implica il reperimento dell'equazione lineare che racchiude le dinamiche relazionali tra i punti dati stabiliti, successivamente utilizzando questa equazione derivata per estrapolare e calcolare il valore assegnato al punto sconosciuto (Dyba & Hakulinen, 2000). Dato l'inizio recente di questo evento, il dataset a nostra disposizione copre un periodo relativamente breve, comprendente un quadriennio dal 2020 al 2023. I risultati, quindi, rappresentano un'approssimazione che potrebbe essere implementata su un arco temporale più ampio. Per prevedere la tendenza dei partecipanti agli eventi in streaming per l'anno 2024, è stata effettuata un'interpolazione lineare manuale utilizzando i dati delle prime quattro edizioni dell'evento (2020, 2021, 2022 e 2023). Questo approccio ha stabilito una relazione lineare tra l'anno e i valori associati, che è stata poi utilizzata per prevedere il numero di partecipanti per il 2024.

Results. La **RQ1** ha lo scopo di comprendere come l'integrazione del metaverso negli eventi influisca sul raggiungimento degli Obiettivi di Sviluppo Sostenibile (SDG's), rivelando un potenziale trasformativo nello sviluppo sostenibile. L'utilizzo di un'osservazione basata su concetti fornisce una comprensione completa dell'argomento. La ricerca sulla pianificazione degli eventi si concentra su tre Obiettivi di Sviluppo Sostenibile chiave: SDG 17 (Partnership), SDG 4 (Educazione) e SDG 13 (Azione per il Clima) (Fiorani & Di Gerio 2018; Liu & Lei 2021; Di Gerio et al. 2020; Mackay et al. 2023). L'indagine si è estesa per analizzare la letteratura in merito agli specifici Obiettivi di Sviluppo Sostenibile (SDG's) in connessione con il Metaverso. L'esplorazione è stata condotta utilizzando il dataset di Scopus. La query di ricerca impiegata per questa revisione della letteratura è stata: TITLE-ABS-KEY (metaverse) AND (impact) AND (sustainable AND development AND goals) OR (sdg*). Il risultato di questa ricerca ha prodotto un totale di 102 documenti. I filtri applicati per questa ricerca sono stati: Tipo di documento "Articolo"; Stato di pubblicazione "Finale"; Lingua "Inglese", e la ricerca è stata limitata a tutti gli Open Access. Dato che questo è, come esplicitamente dichiarato, un argomento emergente, durante il processo di ricerca non sono state imposte restrizioni temporali. Il numero di documenti trovati è risultato 57. Successivamente, è stato eseguito uno screening. Sono stati trovati 12 articoli correlati all'effetto del metaverso sugli SDG's 4; 17 e 13. Gli articoli si concentrano principalmente sulla relazione tra Metaverso ed Educazione e Metaverso e Sostenibilità.

Tab. 2: elaborazione degli autori

	Çelik, F., & Baturay, M. H. (2024). The effect of metaverse on L2 vocabulary learning, retention, student engagement, presence, and community feeling. <i>BMC psychology</i> , 12(1), 58.
	Jamshidi, M., Dehghanian Serej, A., Jamshidi, A., & Moztaazaleh, O. (2023). The meta-metaverse: ideation and future directions. <i>Future Internet</i> , 15(8), 252.
SDG 4	Qadir, A. M. A., & Fatah, A. O. (2023). Platformization and the metaverse: Opportunities and challenges for urban sustainability and economic development. <i>EAI Endorsed Transactions on Energy Web</i> , 10(1).
	Hassani, H., Huang, X., & MacFeeley, S. (2022). Enabling Digital Twins to Support the UNSDGs. <i>Big Data and Cognitive Computing</i> , 6(4), 115.
	Park, S., & Kim, S. (2022). Identifying world types to deliver gameful experiences for sustainable learning in the metaverse. <i>Sustainability</i> , 14(3), 1361.
SDG 17	Chen, P. K., & Huang, X. (2023). Enhancing supply chain resilience and realizing green sustainable development through the virtual environment of the metaverse. <i>Sustainable Development</i> .
	De Giovanni, P. (2023). Sustainability of the Metaverse: A transition to Industry 5.0. <i>Sustainability</i> , 15(7), 6079.
	Cao, W., Cai, Z., Yao, X., & Chen, L. (2023). Digital Transformation to Help Carbon Neutrality and Green Sustainable Development Based on the Metaverse. <i>Sustainability</i> , 15(9), 7152.
	Pachouri, V., Singh, R., Gehlot, A., Pandey, S., Akram, S. V., & Abbas, M. (2024). Empowering sustainability in the built environment: A technological lens on industry 4.0 Enablers. <i>Technology in Society</i> , 76, 102427.
SDG 13	Dwivedi, Y. K., Hughes, L., Baabdullah, A. M., Ribeiro-Narvarez, S., Giannakis, M., Al-Debei, M. M., ... & Wamba, S. F. (2022). Metaverse beyond the hype: Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy. <i>International Journal of Information Management</i> , 66, 102542.
	Jauhiainen, J. S., Krohn, C., & Junttila, J. (2022). Metaverse and Sustainability: Systematic Review of Scientific Publications until 2022 and Beyond. <i>Sustainability</i> , 15(1), 346.
	Joseph, A. (2023). An Exploratory Study on Metaverse and SDGs. In <i>How the Metaverse Will Reshape Business and Sustainability</i> (pp. 83-93). Singapore: Springer Nature Singapore.

Con riferimenrto all'SDG4, si prevede che il metaverso sia cruciale nell'integrare nuove tecnologie nell'istruzione (Jamshidi et al., 2023). Çelik & Baturay (2024) hanno riscontrato impatti positivi sui risultati di apprendimento del sottolineando le caratteristiche immersive e interattive del metaverso. Park & Kim (2022) ne sottolineano il potenziale nel superare vincoli temporali e spaziali nell'istruzione, fornendo pari opportunità e affrontando limitazioni fisiche. Hassani et al. (2022) enfatizzano l'impatto positivo sulle esperienze di apprendimento e sull'accesso equo alle risorse,

eliminando le barriere legate a posizione, lingua e disabilità. Qadir & Fatah (2023) sottolineano il potenziale del metaverso nel migliorare l'apprendimento a distanza attraverso una collaborazione efficace e ambienti virtuali condivisi.

Sfruttando le intuizioni derivate dagli studi sopra menzionati, il metaverso emerge non solo come una forza trasformativa nell'istruzione, ma anche come una piattaforma versatile capace di ospitare eventi diversificati, dalla promozione a eventi culturali, artistici, sportivi e festival. Nell'istruzione, il metaverso offre esperienze di apprendimento immersive e interattive che, quando utilizzate in un evento, possono garantire la diffusione della conoscenza a un vasto pubblico. Questo approccio completo mira a migliorare l'accessibilità e l'interesse affrontando le diverse esigenze del pubblico.

Nel contesto dell'SDG 17 il metaverso funge da piattaforma innovativa per ospitare eventi virtuali, offrendo esperienze immersive e interattive che favoriscono un pubblico più ampio e promuovono collaborazioni tra diverse parti interessate (De Giovanni, 2023). D'altro canto, l'indagine condotta da Chen & Huang ha rivelato che l'ambiente virtuale all'interno del metaverso incoraggia una stretta vicinanza spaziale e fornisce un riscontro multisensoriale, sviluppando risposte emotive durante le interazioni e la condivisione di conoscenze. Queste caratteristiche migliorano l'influenza reciproca e contribuiscono a mitigare i rischi di cooperazione percepiti.

Sulla base di queste conclusioni, le interazioni all'interno del metaverso sono identificate come un catalizzatore per la creazione di nuovi partenariati e collaborazioni. Il metaverso, attraverso le sue caratteristiche immersive e collaborative, emerge come un potente strumento, utilizzabile negli eventi, per favorire sinergie tra diverse parti interessate, promuovendo così sforzi collettivi verso lo sviluppo sostenibile.

Per quanto riguarda l'SDG 13, la tecnologia digitale, come sottolineato da Cao et al. (2023), contribuisce significativamente all'ottimizzazione della produzione e delle operazioni aziendali per obiettivi neutri in carbonio e per gli obiettivi di sviluppo sostenibile verdi. Pachouri et al. (2024) sottolineano il ruolo dei metodi digitalizzati dell'Industria 4.0 nell'ottimizzare l'ambiente costruito per la sostenibilità. Jauhiainen et al. (2022) si concentrano sul Metaverso, evidenziandone il potenziale nel ridurre le emissioni di carbonio sostituendo beni fisici con equivalenti digitali e ottimizzando il mondo fisico attraverso simulazioni e un maggiore livello di consapevolezza. Dwivedi et al. (2022) e Joseph (2023) sottolineano entrambi il ruolo del metaverso nel ridurre l'impronta di carbonio attraverso la diminuzione dei viaggi, la promozione dell'efficienza lavorativa e la facilitazione della replicazione di edifici e città per un impatto ecologico positivo.

L'influenza trasformativa della tecnologia digitale e del metaverso si estende oltre l'ottimizzazione dei processi industriali, abbracciando una rivoluzione nel modo in cui eventi e interazioni sono condotti. Questo cambiamento di paradigma, particolarmente applicabile alle attività legate ai viaggi, ha il potenziale di ridurre significativamente le impronte ambientali. Il metaverso, con la sua capacità di replicare spazi fisici e consentire interazioni virtuali, emerge come un attore chiave nel mitigare l'impatto ambientale tradizionalmente associato ai viaggi. Offrendo alternative a incontri fisici, eventi e visite turistiche, queste tecnologie aprono la strada a un approccio più sostenibile alle interazioni umane, allineandosi all'imperativo di ridurre le emissioni di carbonio e promuovere la responsabilità ecologica.

Per affrontare la RQ. 2, è stata eseguita un'interpolazione lineare con l'obiettivo di comprendere la tendenza e prevedere il numero futuro di partecipanti online alla Phygital Sustainability Expo, al fine di comprendere l'impatto (attuale e futuro) dell'uso di strumenti digitali e del metaverso.

Per offrire una maggiore comprensione del caso di studio analizzato, sono state effettuate delle analisi preliminari attraverso i dati forniti dall'ente organizzatore dell'evento. I dati sulla portata totale rappresentano la complessità degli utenti raggiunti dal Phygital Sustainability expo attraverso le strategie di comunicazione implementate utilizzando diversi canali, azioni e strumenti sia online che offline.

Tab. 3: elaborazione degli autori sulla base dei dati forniti dalla Sustainable Fashion Innovation Society

Canali digitali	Azioni	Tod	Reach Totale
Paid media campaign	Impressions Reach Likes Shares and nuovi followers	Meta Instagram LinkedIn	2.000.000
Influencer marketing	90 influencer/opinion leader internazionali intersettoriali	Kaby Lane José Mourinho Agil Mamyyev	18.000.000
Articoli online dei principali partner istituzionali	I principali partner hanno dedicato spazi sui loro siti web ufficiali	Fao Poste Italiane European Commission European Parliament Italian Trade Agency Italian Ministry of Foreign affairs Rome Capital City Ferrovie dello Stato Lega di calcio serie B Enel CNH industrial	10.000.000
Media Partners	Programmi televisivi in prima serata sull'evento Streaming integrale dell'evento Streaming della conferenza stampa dell'evento	Rai Today.it Forbes	15.000.000
Social media Marketing	Grande visibilità per tutti i partner sui canali ufficiali	Instagram LinkedIn Facebook	30.000

Tab. 4: elaborazione degli autori sulla base dei dati forniti dalla Sustainable Fashion Innovation Society

Canali Offline	Azioni	Tool	Reach totale
Print media	Articoli di giornale	Corriere della sera Milano Finanza Repubblica Libero La Stampa Il Messaggero Il Giornale Forbes Fortune	15.000.000
Out of home ADS	1 Ledwall in Times Square a New York Poster dell'evento sugli autobus della città di Roma 10 Ledwall a Roma e Milano Cartelloni dell'evento su tutti i treni nazionali	Nasdaq ATAC Urban Vision Ferrovie dello stato	12.000.000

Per comprendere meglio l'entità dell'evento, è stata generata una panoramica dei paesi di origine dei partecipanti fisici. L'evento analizzato, di portata globale, sottolinea la necessità di comprendere l'impatto dell'adozione di strumenti digitali e del metaverso e le sue implicazioni future. Questa valutazione è cruciale, data la sua duplice influenza del digitale nella riduzione dei fattori legati ai viaggi e nell'espansione dell'audience raggiunta.

Tab. 5: elaborazione degli autori sulla base dei dati forniti dalla Sustainable Fashion Innovation Society

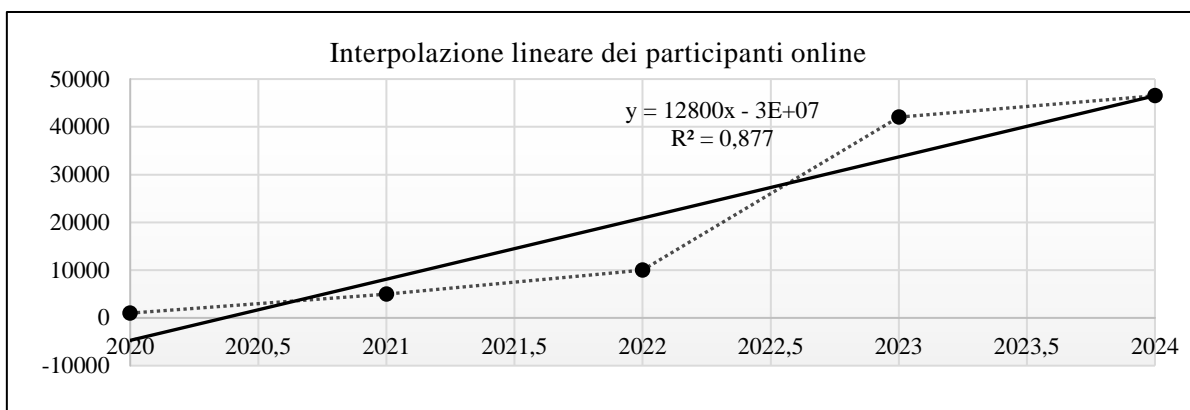
Divisione per paese di provenienza dei partecipanti in presenza			
15.000 partecipanti			
		Italia	85%
Europa	76%	Paesi Bassi	5%
		Resto dell'Europa	10%
USA	12%		
America Latina	9%		
Altre nazioni	3%		

Successivamente, è stata svolta l'analisi predittiva utilizzando il metodo di interpolazione lineare utilizzando i dati concernenti le presenze in streaming dell'evento durante gli anni in cui esso si è svolto.

Tab. 6: elaborazione degli autori sulla base dei dati forniti dalla Sustainable Fashion Innovation Society

Anno	N. partecipanti in streaming
2020	1.000
2021	5.000
2022	10.000
2023	42.000

Fig. 1: elaborazione degli autori



Il numero stimato di partecipanti online per l'anno 2024 ammonta a circa 46.500 individui, riflettendo una previsione analitica della partecipazione del pubblico nel mondo virtuale dell'evento. Il coefficiente di determinazione, R^2 , misura la bontà di adattamento del modello lineare ai dati (Dyn et al, 1990). Varia da 0 a 1, dove 1 indica un adattamento perfetto. In questo caso, $R^2=0.877$, il che significa che circa l'87,7% della variabilità nei valori previsti (basati sul modello lineare) può essere spiegato dalla relazione lineare con l'anno. È importante sottolineare, però, che tali dati rappresentano un'approssimazione e un dataset più ampio fornirebbe una percezione migliore della situazione, considerando l'attuale insieme di dati limitato. Inoltre, viene riscontrato un forte aumento delle presenze tra il 2022 e il 2023, quando, per la prima volta, il metaverso è stato utilizzato nell'evento per presentare la "sfilata di moda narrata" online.

Research limitations. I limiti di questo lavoro includono la focalizzazione su uno specifico caso di studio, il che suggerisce la possibilità di una futura espansione della ricerca per includere una gamma più ampia di eventi in settori diversi. Inoltre, le limitazioni derivano dal breve periodo temporale del dataset, poiché l'evento in analisi è in corso solo da pochi anni. Si riconosce la necessità di estendere l'analisi a eventi con dati che coprano un arco temporale più ampio per fornire ulteriori approfondimenti. Inoltre, lo stato attuale del discorso accademico rimane incompleto, e ulteriori indagini sono necessarie per comprendere le implicazioni del metaverso sullo Sviluppo sostenibile. Questa lacuna fornisce uno spazio opportuno per ulteriori ricerche che offrano preziosi approfondimenti specificamente progettati per brand e associazioni che si avventurano nel fiorente mondo del metaverso.

Managerial implications. Da un'analisi della letteratura è emerso che l'utilizzo del metaverso come canale di vendita ridefinisce il retail, consentendo transazioni dirette all'interno di ambienti virtuali e trasformando il semplice atto dello shopping in un'esperienza coinvolgente e dinamica. Un aspetto cruciale di questa rivoluzione è l'impiego avanzato dei dati. Grazie all'analisi dei dati, lo shopping virtuale può offrire una personalizzazione su misura, presentando prodotti pertinenti e stabilendo un collegamento diretto tra cliente e merce. In questo scenario, il metaverso sta ridefinendo il concetto di shopping online, aprendo nuove opportunità per i rivenditori di creare esperienze uniche e coinvolgenti per i consumatori mitigando i costi operativi dovuti agli store fisici. Le imprese dovrebbero progressivamente orientarsi verso l'omnicanalità, incorporando il metaverso nelle proprie strategie. Tale approccio non solo comporterebbe vantaggi nella gestione delle relazioni con i consumatori, ma anche in termini di contenimento dei costi.

Lo studio suggerisce implicazioni brand, organizzazioni e policy maker, evidenziando il ruolo del metaverso nell'integrare principi di sostenibilità negli ambienti virtuali e nel raggiungere obiettivi di sostenibilità. Tale lavoro evidenzia come il metaverso sia uno strumento dinamico in grado di ridefinire gli eventi, coinvolgere pubblici diversificati e contribuire a un futuro più sostenibile. Infatti, la vasta portata che tale tecnologia svolge un ruolo cruciale nella diffusione della conoscenza e il suo utilizzo in eventi legati alla sostenibilità, come il Phygital Sustainability Expo, promuoverebbe la sensibilizzazione tra un gran numero di persone. Il metaverso, utilizzato negli eventi, emerge anche come uno strumento volto a favorire sinergie tra diverse parti interessate. Attraverso l'uso delle nuove tecnologie, come dimostrato, possono essere generate collaborazioni tra diverse aziende e tra aziende e istituzioni durante gli eventi, facilitando l'avvio di cambiamenti in una direzione sempre più sostenibile. Il metaverso, replicando spazi fisici e consentendo interazioni virtuali, svolge un ruolo cruciale nel ridurre l'impronta ambientale associato ai viaggi fornendo alternative a incontri ed eventi in presenza. Dunque, l'utilizzo del metaverso rappresenta per le imprese un'occasione unica per progredire verso gli Obiettivi di Sviluppo dell'Agenda 2030.

Originality of the paper. L'originalità di tale lavoro risiede nell'approccio innovativo proposto nel contesto della sostenibilità e della gestione degli eventi, focalizzandosi sull'esplorazione delle implicazioni derivanti dall'integrazione del metaverso negli eventi, con una particolare attenzione rivolta al Phygital Sustainability Expo nel settore della moda.

La ricerca si propone di colmare lacune presenti nel dibattito accademico corrente che riguarda l'intersezione del metaverso con la sostenibilità, offrendo spunti pratici e pragmatici per le imprese che si muovono in questo panorama ancora in evoluzione. L'analisi dei risultati mira a fornire una base di conoscenza solida e informativa, in grado di guidare le decisioni strategiche nel contesto dell'integrazione del metaverso negli eventi, con particolare riferimento alla sostenibilità nel settore della moda.

Questo approccio multidisciplinare si inserisce in un contesto accademico che spesso si è concentrato su aspetti specifici del metaverso o della sostenibilità, ma raramente ha esplorato in dettaglio la loro intersezione. Attraverso la metodologia predittiva adottata, il paper contribuisce a proiettare l'attenzione al di là del presente, offrendo una visione prospettica sull'evoluzione futura di eventi sostenibili supportati dal metaverso.

L'articolo aspira a non solo ampliare la comprensione accademica dell'impatto del metaverso sugli obiettivi di sviluppo sostenibile, ma anche a fornire suggerimenti tangibili per le aziende e le organizzazioni che mirano a incorporare questa innovazione nella pianificazione e nell'esecuzione degli eventi. L'originalità e la rilevanza di questo contributo accademico risiedono, quindi, nell'approccio pionieristico, nella sua natura interdisciplinare e nella sua capacità di tradurre concetti complessi in indicazioni pratiche, alimentando così la discussione e la prassi nel campo in continua evoluzione del metaverso e della sostenibilità degli eventi.

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The impact of sustainability and country-of-origin on consumers' willingness-to-pay for a brand: A conceptual framework

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Abstract

The influence of country-of-origin (COO) and sustainability cues on consumers' willingness-to-pay (WTP) for sustainable products has not been fully elucidated in extant literature. This paper proposes a new conceptual framework for understanding how a brand's COO and sustainability information affect consumers' WTP for the focal brand, drawing on three well-established theories in the fields of marketing and psychology: cue utilization theory, signaling theory and attribution theory.

Key words: Sustainability; country-of-origin; willingness-to-pay; conceptual framework.

Framing of the research. *In this study we seek to enhance our conceptual understanding how the country-of-origin (COO) of a brand and information about the latter's sustainability impact consumers' willingness-to-pay (WTP) for the focal brand. COO, namely "the country which a consumer associates with a product or brand as being its source, regardless of where the product is actually produced" (Jaffe and Nebenzahl, 2006, p.29) has been found to influence consumers' evaluations of sustainable products (Dekhili and Nguyen, 2021). However, while it is known that country green/environmental image (Chan, 2000; Dekhili et al., 2021) and COO sustainability reputation (Cowan and Guzman, 2020) have an impact on sustainable product attributes in consumer decision making (Brand and Rausch, 2021), it is unclear exactly how COO influences WTP in the presence versus absence of sustainability cues.*

Extant literature specifically focusing on the interplay between COO and sustainability with explicit focus on WTP as an outcome variable is both sparse and (highly) contradictory. For example, Magnusson et al. (2015) found that consumers perceive corporate social responsibility (CSR) initiatives significantly more positively when they are associated with countries that have a strong environmental reputation. In turn, this positive perception leads to a higher WTP for the products or services offered by these firms. However, this effect was not observed in the study by Dekhili and Achabou (2015) who found that, while a favorable COO image has no impact on the WTP for an eco-labeled product, an unfavorable COO image has a negative impact on the WTP for the product. A more recent study by Montanari et al., 2023 supported Dekhili and Achabou (2015) findings in the case of a favorable COO image (i.e., no effect on WTP) but found completely the opposite in the case of a less favorable COO image; WTP actually increased for the sustainable product when associated with the weaker COO.

In short, the literature shows that the simultaneous presence of COO and sustainability stimuli can affect consumers' WTP. Nonetheless, how the relationship between COO and sustainability impacts consumers' WTP remains ambiguous and unclear. This is an important question since WTP denotes the maximum price a consumer is willing to spend on a product or service, through a trade-off between perceived benefits and costs (Homburg et al., 2005; Koschate-Fischer et al., 2012) and is, therefore, of substantial managerial relevance for the development of pricing strategies (Miller et al., 2017; Wertenbroch and Skiera, 2002; Yuen et al., 2016) and the competitive positioning of companies. Although there is evidence indicating an increasing consumer inclination towards sustainable products and services (Elhoushy and Lanzini, 2021; Paul et al., 2016; Rosenbaum et al., 2022), several researchers have highlighted a discrepancy between the significance customers claim to assign to sustainability and their actual buying decisions (Narayanan and Singh, 2023; Barbarossa and Pastore, 2015). This disparity between consumer attitudes and behavior is widely acknowledged in the consumer behavior and social psychology literature (Carrigan and Attala, 2001; Roberts, 1996; Abraham and Sheeran, 2003), however, it is particularly relevant in the context of sustainable consumption since "sustainability attributes do not always drive consumer choice, even when consumers value sustainability positively" (Bangsa and

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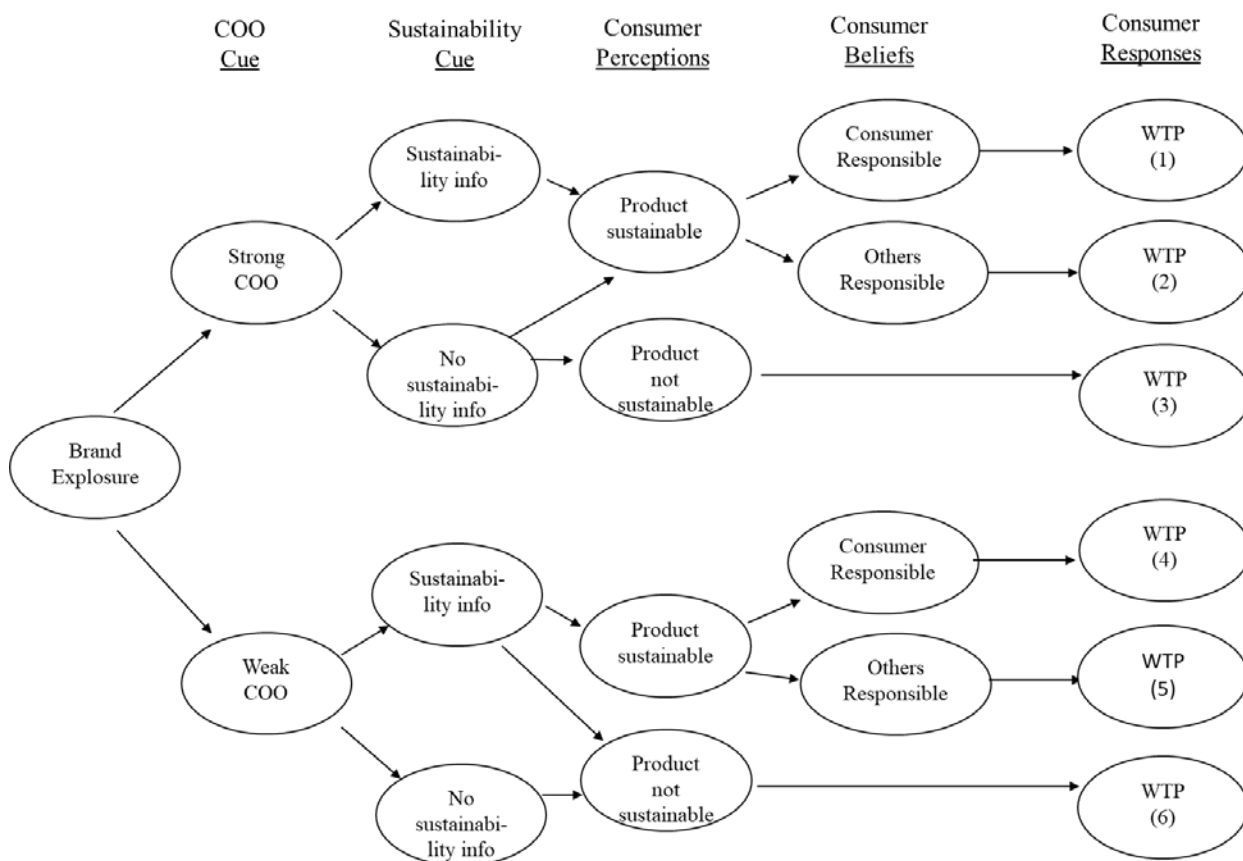
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Schlegelmilch, 2020, p.2). Put simply, consumers may well display positive attitudes toward sustainable products but may not be willing to bear additional costs to obtain them.

Purpose of the paper and methodology. We propose a conceptual framework to elucidate the potential responses of consumers in terms of WTP when a brand is associated with either a strong or a weak COO in the presence and absence of sustainability information (e.g., an eco-label). In doing so, we draw on three well-established theories in the fields of marketing and psychology: cue utilization theory (Jacoby and Haddock, 1971; Olson, 1972; Olson and Jacoby, 1972), signaling theory (Erdem and Swait, 1998; Erdem et al., 2006; Erdem and Swait, 2016), and attribution theory (Heider, 1958; Kelley and Michela, 1980; Folkes, 1988).

Our framework initially distinguishes between two main settings based on the brand's COO (strong vs. weak) and subsequently considers two conditions regarding sustainability information relating to the focal brand (presence vs. absence). This results in a total of four scenarios to which a consumer might be exposed, each of which results in different interpretations as to whether the brand in question is sustainable or not. Such interpretations together with consumers' attributions regarding who should carry the cost of sustainability will then determine WTP. Figure 1 graphically describes our framework; we discuss its logic and relevant pathways in the section that follows.

Figure 1. Proposed conceptual framework.



Source: own elaboration.

Results. According to signaling theory (Erdem and Swait, 1998), companies convey information about their specific attributes, such as their reputation and product features, to gain a competitive advantage; consumers examine these signals when making purchasing decisions (Erdem et al., 2006). In this context, according with cue utilization theory that provides a valid framework for evaluating consumer reactions to different product attributes (Richardson et al., 1994), COO is an extrinsic cue that acts as a signal and influences consumer responses (Lu et al., 2016; Chao 1993). Similarly, sustainability labels are extrinsic cues used by consumers when deciding on sustainable products (Lee et al., 2020). Consistent with the triple bottom-line notion of sustainability (Elkington, 1997), such labels may convey information about environmental sustainability (e.g., carbon footprint), social sustainability (e.g., absence of animal testing) or economic sustainability (e.g., fair trade).

When a brand carries a sustainability label and originates in a country with a strong image, it is more likely that the brand will be perceived as being sustainable as the sustainability cue is more credible. In other words, the consumer is confronted with two consistent positive signals, whereby the COO cue reinforces the sustainability cue. However, in the case of a strong COO, the absence of a sustainability cue does not necessary mean that the consumer will conclude that the brand is not sustainable. This is because the consumer may assume that the brand is sustainable because it originates in a country with a strong COO. Put differently, the COO may act as a “halo” whereby consumer infer the brand’s

sustainability based on their beliefs regarding the country sustainability reputation (Cowan & Guzman, 2020). This possibility is shown in Figure 1 by the arrow from “No sustainability info” to “Product sustainable”.

The situation is very different when the focal brand originates in a weak COO. In this case, the presence of sustainability information (a positive signal) does not guarantee that the brand will be perceived to be sustainable. This is because consumers may not believe such information given that the brand’s COO is not strong; in other words, the sustainability information conveyed to consumers is not seen to be credible. This possibility is shown in Figure 1 by the arrow from “Sustainability info” to “Product not sustainable”.

From the above discussion, it becomes evident that COO and sustainability cues should not be considered separately, when they are factored into consumer decision making. As shown in Figure 1, perceptions about a brand’s sustainability are not solely formulated based on the presence of an explicit sustainability cue (e.g., an eco-label) but also implicitly influenced (either positively or negatively) by the brand’s COO.

Once consumers have interpreted the COO and sustainability signals and reached a conclusion about the brand’s sustainability (or lack of), the question arises how they will react in terms of their WTP. Based on signaling theory alone, the prediction would be that a brand perceived to be sustainable and originating in a strong COO (two positive signals), would result in the highest WTP. Conversely, a brand from a weak COO that is not perceived to be sustainable would lead to the lowest WTP. While this line of argument is intuitively appealing, it is also flawed because it fails to take into account a cognitive process commonly used by consumers known as attribution of responsibility (Folkes, 1984); the latter has a significant impact on pro-environmental behavior (Bamberg and Moeser 2007) and can, therefore, also potentially influence the WTP for sustainable products. Attribution refers to the cognitive process of perceiving or inferring the cause of a certain event or behavior (Kelley & Michela, 1980) and the subsequent inferences about the consequences (Folkes, 1988).

Attribution of responsibility has been widely investigated in the context of sustainability research to, for example, understand energy-saving behavior (Yue et al., 2023) or the selection of destinations that have social responsibility initiatives (Su et al., 2020). However, it has not been used to examine the specific locus of responsibility that individuals assign when making decisions about their WTP for sustainable products. A higher cost for a product can be linked to its sustainability (cause) due to consumers believing the explicit sustainability signals received or by assuming sustainability due to the halo effect of COO (see earlier discussion). The consequence is the decision to pay or not pay a higher price for the sustainable product and attribution of responsibility serves as a mediator between the intention to behave in a certain way and the actual behavior (Sun et al., 2022). In this context, consumers often attribute responsibility for sustainability costs to governments or companies rather than to themselves (Montanari et al., 2023), especially when it comes to brands from developed countries (i.e., strong COOs) for which governments provide funding for sustainability and incentivize companies to reduce their socio-environmental impact. Thus, according to attribution theory, consumers who feel personally responsible for sustainability costs are more likely to be willing to pay more for a sustainable product. Conversely, consumers’ WTP is likely to be lower if they attribute the costs of sustainability to others (such as governments, institutions, or companies). In short, the more an individual believes that the locus of responsibility for covering the (extra) cost of sustainability lies with consumers, the higher his/her WTP.

Explicitly taking into account the attribution of responsibility may well explain the lack of difference in WTP between sustainable and not sustainable product versions observed in prior studies (e.g., Narayanan and Singh, 2023). For example, referring to Figure 1, it becomes evident that while WTP (1) can - all other things being equal - be expected to exceed WTP (2), it is not necessarily the case that WTP (2) will be higher than WTP (3) despite the fact that WTP (2) is associated with a product perceived to be sustainable while WTP (3) is associated with a non-sustainable product. Analogous inferences can be drawn about the relationships among WTP (4), WTP (5) and WTP (6).

Some prior studies give the impression that consumers who receive information about sustainability immediately perceive the product or brand as being sustainable, as result of which they are willing to pay a higher price for it (e.g. Del Giudice et al., 2018). Our model questions this “automatic” process as it does not explicitly account either for the credibility of sustainability signals (which, as noted earlier, is a function of the brand’s COO) or for the attribution of responsibility by consumers. Indeed, the conflicting findings of prior empirical research on the simultaneous impact of COO and sustainability cues on WTP may well be due to the neglect of these two factors in the relevant research designs.

Research limitations. A key limitation of the current study - which is also an opportunity for further research - is the absence of empirical data to operationalize the proposed framework and reveal the magnitude of the differences in WTP associated with the different model pathways (i.e., WTP (1) - WTP (6) in Figure 1). Another limitation is the consideration only of a single COO notion (the brand origin) and the neglect of other potentially relevant origins, such as country of manufacture or country of design. A third limitation is the lack of attention to potential moderating variables (e.g., consumer skepticism, cause involvement, type of sustainability information) on the model linkages. The same applies to control variables (e.g. income or price sensitivity) that may also impact consumers’ WTP.

Managerial implications. Our conceptual framework is useful for international marketing managers who wish to capitalize on sustainability claims and COO associations when formulating their strategies for entering new markets and determining price positioning strategies. For example, comparing WTP (1) with WTP (3) and WTP (4) with WTP (6) should offer insights into the maximum gain that can be expected as result of sustainability efforts. Similarity, comparing WTP (1) with WTP (4) and WTP (3) with WTP (6) should reveal any WTP differentials due to COO differences.

Furthermore, comparing WTP (2) with WTP (3) and WTP (5) with WTP (6) should help managers determine whether the extra costs of sustainability are likely to be covered by consumers' higher WTP. Needless, to say, that for these comparisons to be of practical value, marketing research should be conducted in the specific product category of interest with the relevant brand origins as COO stimuli.

Finally, the proposed framework suggests that consumers may exhibit higher WTP due to their beliefs about the locus of sustainability responsibility. Therefore, managers can encourage consumers to buy sustainable products by appealing to their sense of personal responsibility as well as trying to stimulate it, for example, with sustainability awareness campaigns.

Originality of the paper. Our framework provides a new theoretical lens to the study on pro-environmental consumer behavior by specifically, examining the impact of sustainability and the COO cues on consumers' WTP and highlighting the close interdependence of these cues. The novelty of the proposed framework lies in the explicit consideration of the credibility of the information associated with these cues as well as the attribution of responsibility aspect that has hitherto not been taken into account in prior research on the sustainability-WTP link.

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Conceptualizing perceptions of the institutionally derived ‘maneuverable space’ for value (co)creation

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Framing of the research. *Understanding how to successfully identify, generate, and offer resources to customers and other stakeholders is essential for any business enterprise. This process involves attending to the ever-changing needs of customers, which are influenced by shifts in market regulations, cultural practices, and cognitive frameworks. These institutional arrangements shape and are shaped by business and societal behavior, affecting perceptions of the available solution space, which refers to the boundaries of resource integration for generating solutions.*

Continuous evaluation and reevaluation of activities and resources in relation to the business landscape are crucial for enterprises to adapt to the market environment, often described as a service ecosystem. Conceptual frameworks provide a roadmap for navigating this changing terrain, enabling businesses to cope with incremental or radical changes by understanding market dynamics and innovating new resource combinations to address customer needs.

In recent years, there has been growing interest in incorporating institutional aspects into theoretical developments of markets as ecosystems, where value creation is seen as a co-creative process involving the integration of resources from various actors. However, there remains a need for further research on how institutional elements shape value co-creation processes and market dynamics. Incorporating institutional elements into market theories is essential because regulatory, normative, and cognitive rules influence resource integration and shape market behaviors. These elements are fundamental for understanding market changes and innovation diffusion, as they both enable and constrain how resources are accessed and integrated, thereby affecting the perceived value of solutions.

Business enterprises must understand how to effectively identify, generate, and offer resources to customers while navigating changing institutional arrangements in markets. Institutional elements, such as regulations, norms, and cognitive frameworks, shape market behavior and influence the perceived ‘solution space’ (the potential and experiences value) for resource integration. Recent research emphasizes integrating institutional aspects into theoretical frameworks to comprehend value co-creation processes.

Purpose of the paper. *To move beyond traditional views of value-added transactions towards understanding value-in-use from resource integration, this paper introduces the concept of the institutional solution space. This concept focuses on how institutional arrangements enable or limit the potential solution space for resource integration activities, deepening our understanding of value generation through actor-generated institutions. Drawing on a case study of the music industry's digitalization and market transformation, this paper illustrates the concept of the institutional solution space in practice. It proposes pathways for mid-range theory developments on market change and the role of institutions in shaping markets as ecosystems, complementing recent research on market innovation and emergence. Viewing markets as ecological networks of organized behavior systems, marketing activities involve the integration and recombination of resources to solve specific problems and meet customer needs. The accessibility and utilization of resources affect the potential and perceived value of solutions, known as the solution space, which is influenced by institutional arrangements.*

Institutional elements, including regulatory, normative, and cultural/cognitive aspects, enable and constrain value co-creation processes by shaping actor interactions and resource integration. Understanding the dynamic nature of institutional logics and shared arrangements is essential for grasping the contextual dimension of resource integration and value creation.

In conclusion, the concept of the institutional solution space offers a framework for understanding how institutional arrangements influence resource integration and value co-creation in markets. By considering regulatory, normative, and cultural/cognitive aspects, businesses can better navigate the evolving market landscape and innovate to meet changing customer needs.

Methodology. *The paper is primarily conceptual in nature, we do however rapport on on findings from the the music industry's digitalization illustrate the changing institutional solution space, hence, contextualizing the papers conceptual approach.*

Results. *The music industry contextualization demonstrates how institutional elements influence resource integration and value co-creation. The institutional solution space concept helps understand the dynamic interplay between institutions, resource integration, and value creation. It emphasizes the need for firms to adapt to changing institutional elements to capitalize on emerging opportunities. The institutional solution space comprises regulative,*

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normative, and cultural-cognitive elements that enable or limit resource integration possibilities (Fehrer et al., 2020). Firms must recognize these elements' impact on value propositions and adapt to changing institutional arrangements. By focusing on resource integration and the institutional solution space, firms can better navigate market changes and enhance value creation.

We report on findings stating that, initially relying on vinyl records and CDs, the industry was unprepared for the shift to digital music facilitated by the internet. Early P2P file-sharing platforms disrupted traditional distribution models, challenging existing norms and regulations. However, market reactions, such as Apple's iTunes and the iPod, adapted to these changes by offering legal alternatives, reshaping the industry. The digitalization of the music industry provides a compelling example illustrating the evolving institutional solution space, without making broad empirical generalizations.

-From Vinyl Records to CDs:

For decades, the music industry thrived on vinyl records and CDs until the late 1990s when the emergence of the World Wide Web introduced new challenges. While the industry capitalized on the transition to CDs by re-issuing back-catalogs, it underestimated the impact of high-speed internet connections and online piracy. Initially dismissing online piracy as a minor inconvenience, industry leaders failed to anticipate users' increasing access to affordable computers, larger storage capacities, and faster internet speeds. Consequently, consumers found it easier to download music illegally than to purchase CDs.

-The Music Goes Online:

Early adopters utilized peer-to-peer (P2P) software to share music, exploiting a legal grey area. As technology advanced, new P2P platforms like Pirate Bay made accessing music easier and more widespread, challenging traditional norms of music ownership and consumption. With limited legal alternatives, users gravitated towards P2P platforms, reshaping perceptions of legality and ethicality.

-The Market Reacts:

Facing declining CD sales, the music industry had to adapt its value proposition. Apple's iTunes and iPod emerged as pioneers in offering legal digital alternatives, allowing users to purchase individual songs and compile personalized playlists. Rather than resisting technological change, Apple's approach embraced it, expanding opportunities for both users and companies. Today, consumers can access music through various channels, including digital platforms like iTunes and Spotify, as well as traditional formats like CDs and vinyl records.

Contrary to early predictions of a decentralized music distribution landscape, digital distribution is now dominated by a few key players such as Apple's iTunes, Tidal, and Spotify. While the range of solutions for accessing and enjoying music has expanded in recent years, the number of major players remains relatively concentrated compared to traditional record stores.

In summary, the illustration of the music industry's digitalization highlights the dynamic interplay between technological innovation, consumer behavior, and institutional change. By adapting to shifting market dynamics and embracing digital solutions, the industry has managed to evolve and thrive in the digital age, offering consumers a diverse range of options for accessing and enjoying music.

Research limitations. This conceptual paper prioritizes dynamic actor and resource constellations within service ecosystems over linear value chains. It aligns with the notion of markets as constituted by value constellations rather than linear value chains. However, while the paper aims for midrange theory development, it does not propose specific predictions due to its focus on presenting a comprehensive model. Future research could focus on developing propositions to predict the outcomes of resource integration in light of institutional elements and arrangements. Complementary empirical studies and conceptual refinements of the institutional solution space are encouraged to further elucidate the role of institutions in markets and marketing. While this paper presents a conceptual framework for understanding the institutional solution space, further empirical research is needed to validate and refine the concept. Future studies could develop propositions to predict value co-creation outcomes based on institutional arrangements. Additionally, exploring the role of institutions in specific industries and contexts could provide deeper insights into market dynamics and resource integration processes.

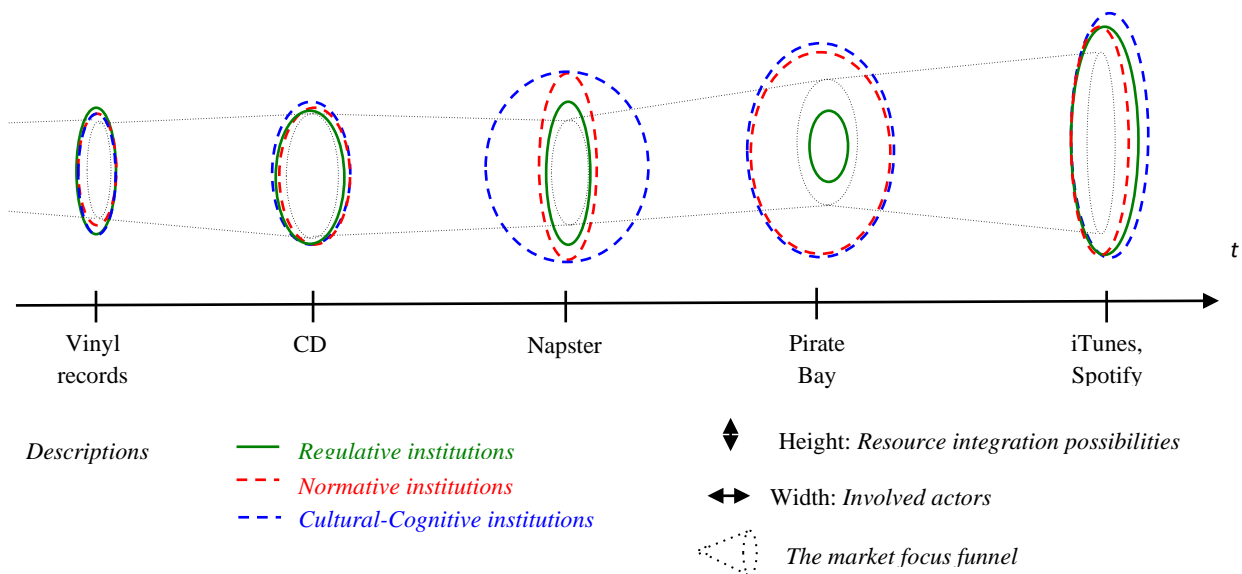
Managerial implications. Managers can leverage the institutional solution space concept to understand how institutional elements influence resource integration and value co-creation. This understanding can inform strategic decisions and help firms adapt to changing market conditions. The concept offers a holistic view of markets as starting point for analysis, and enables managers to identify opportunities for innovation and growth.

From a business perspective, the provided illustration shows how institutional elements interchangeably affect the actors actually being considered part of the context (and consequently the relevance and value of the resources they provide) and if and how their activities and resources affect the potential value that can be generated (in terms of the perceived "space" in which actors can integrate the resources). The solution space, as the perceived value creation potential, is both enabled and delimited over time by institutional elements—can be guided by regulation or deregulation, normative behavioral changes, or shifting cognitive-cultural frames of reference amongst social and business actors. By recognizing the business practice relevance of the "institutional solution space" as equally important to understanding

its role in the current market space, firms can be better prepared for changes beyond, for example, new technologies per se. As illustrated in the case study, the advent of new technologies is sometimes only an instigator of change, whereas the interplay of the changes in the institutional elements generate more transformative changes. The institutional elements change over time, affecting both resource integration activities, the prominence of involved actors, and how both social and business actors reposition their value propositions (i.e., leading to a realigned opportunity space). As previously outlined, different competing institutional elements are at play at different points in time, both enabling and limiting the potential value generated through actors' resource integration activities. The case also illustrates how different (established and non-established) actors can be both directly and indirectly engaged in and affected by institutional change, shaping their configuration in the service ecosystem and the nature of resource integration. It thus offers insights into the institutional solution space market's shaping and market innovating potential.

Fig. 1 contextualizes the institutional solution space as the area of resource integration possibilities (height) and engaged actors (width), also illustrating how the studied actors position their value proposition (opportunity space) at each point in time (dotted circles).

Fig. 1: Conceptualizing the institutional solution space (the case of the music industry).



Source: Authors own illustration.

The music industry transformation illustrates how the different institutional elements change over time based on the involved actors' (both business and social actors) reframing of current practices and norms. It also illustrates how the foci for a study—whether at the macro, meso, or micro level (i.e., a market, a group of companies, or an organization)—will need to adapt when it comes to framing the boundaries of the phenomena and the related actors. The institutional elements are often connected to the pre-designated actor roles (Thornton et al., 2012), as well as how “the rules of the game” (North, 1990) are understood. In Figure 1, the regulative elements that offer a certain institutional space are marked, but the normative or cultural-cognitive can differ. Therefore, there will often be a degree of friction between the different elements.

The case can be seen as a micro-level contextualization of the institutional solution space concept. The case illustrates how the dynamics of institutional elements affect the perceived boundaries (the resource integration potential) of available solutions in how the perceived nature of resources and the dynamic role and “functional identity of actors” (Rondell and Sorhammar, 2010) are integrated to generate a solution. The music listeners' newly acquired cognitive abilities of integrating digital technology iteratively created a cultural change that had a profound effect on the normative behavior of how music is marketed, distributed, and accessed. This, in turn, led to a change of legislation (i.e., the regulative institutional element) (Scott, 2014), thus enforcing and offering new opportunities for firms to redesign their value propositions. Rather than offering a pre-defined utilization of “plastic discs” as resource integration between CDs and a CD player, recorded music became a resource in itself, used as input for experiencing music in a number of contexts. Not only did the changes in culturally and cognitively derived behaviors led to changes in the normative and regulative dimensions, but the changes in the institutional elements also explained the changes in the very nature of the resources used for enjoying music (i.e., how new combinations and constellations of actors, resources, and activities were integrated to generate value).

Resources not considered relevant in the music context prior to the transition (telephone/modem lines, optical fiber internet connections) “became” relevant and vital (Fischer et al., 2010; Löbler, 2013; Peters et al., 2014) and the nature of “existing” resources was transformed in terms of their operand and operand natures. As stated above, rather than

focusing on the operand characteristics of music on a CD and firm output, music as a resource has become more operant in its nature, being used as input for value creation and transitioning the business from selling plastic discs to facilitating resource integration conditioned by the actors' perceived institutional solution space. This transitional change is not over; for instance, some artists and record companies provide user-toolkits in the form of snippets from a song to enable and even encourage fans to make personal versions of songs to be posted on social network websites. Facilitating user value co-creation (through resource integration) thereby contributes to a dynamic institutional solution space, in which the traditionally divided consumption and production contexts become more embedded. The opportunities offered by the changing and an expanding institutional solution space by using and integrating non-traditional resources and practices-competencies, capabilities and attributes-are potentially beneficial for all (social and economic) actors (as resource integrators) in markets (as networks and service ecosystems).

Originality of the paper. The institutional solution space concept also relates to market innovation, where alignment of institutional elements determines the success of new value propositions. Proactive engagement with institutional change can provide first-mover advantages and strengthen performance. Firms should develop institutional capabilities to leverage changing institutional arrangements for competitive advantage. The institutional solution space concept offers insights into how actors engage in resource integration and value co-creation within a service ecosystem. It highlights the role of institutional elements in shaping market dynamics and provides a framework for understanding market changes and business practices. Managers can use this concept to navigate evolving market conditions and optimize resource integration strategies.

The institutional solution space comprises regulative, normative, and cultural-cognitive elements, alongside actors' resource integration possibilities, shaping viable resource integration scenarios within a service ecosystem. This conceptualization underscores the dynamic nature of the institutional solution space, emphasizing its role in guiding value propositions within evolving institutional contexts.

Understanding the institutional solution space is crucial for grasping the dynamics of resource integration and value co-creation. It highlights the evolving nature of resources and actors' roles, transcending traditional notions of value creation. The dynamic interplay of institutional elements influences resource integration potential and value propositions, driving market evolution.

Market innovation hinges on the alignment of institutional elements. Actors can influence institutional dynamics through proactive engagement, paving the way for new forms of resource integration. However, regulatory alignment is essential for fully-fledged market innovations to materialize, creating legal opportunity spaces for value propositions to thrive.

Enterprises embracing the institutional solution space recognize the importance of offering new solutions aligned with evolving institutional arrangements. This goes beyond mere bundling of offerings, focusing on providing inputs for resource integration that leverage the institutional solution space. Proactive engagement with institutional change can confer first-mover advantages, emphasizing the need to develop institutional capabilities.

In conclusion, the institutional solution space concept offers conceptual originality through valuable novel insights for navigating market dynamics and capitalizing on emerging opportunities for value creation. By embracing this concept, businesses can strategically position themselves within evolving institutional landscapes, driving innovation and fostering competitive advantage.

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Narrating the past. Exploring the antecedents of investments in heritage marketing tools by centenarian Italian companies

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Abstract

In recent years, corporate heritage has assumed considerable importance both in academic debate and managerial practice, in line with the growing attention given to the temporal dimension of organizations and questioning the traditional marketing approach to seeing the past as a “foreign country”. As the past has started to play a role in corporate-level marketing and communication purposes, corporate heritage marketing has emerged as a new academic field. Heritage marketing is based on the strategic use of the company’s historical and cultural heritage and the system of principles and beliefs of individuals and the organization. It offers the opportunity to build long-lasting relationships with all stakeholders. The main aim of this study is to investigate if and how Italian long-lived companies are oriented towards strategic exploitation of their cultural and historical heritage by investigating the actual use of the different tools potentially available to implement a heritage marketing strategy. Indeed, we investigate some potential antecedents of the adoption of the different tools among centenarian companies, namely the family nature of the business, its longevity, its size, and its social responsibility. To this aim, we collected information about 181 large companies entered in the National Register of Italian Historical Firms edited by Unioncamere. Data collection was conducted through desk research, while the Poisson regression model was used to test the hypotheses.

Key words: *heritage marketing; heritage marketing tools; corporate heritage; centenarian companies; Italy.*

Framing of the research. *Although all companies and all brands have a history, whether it be long or short, it is necessary to strategically enhance their journey to be able to boast a heritage (Riviezzo et al., 2021). In recent years, corporate heritage has assumed considerable importance both in academic debate and managerial practice (Balmer, 2011, 2013), in line with the growing attention given to the temporal dimension of organizations (Burghausen and Balmer, 2014). Within the corporate heritage canon, scholars have highlighted the centrality of the past, along with its significance for the present and the future of the company, questioning the traditional marketing approach to seeing the past as a “foreign country” (Balmer and Burghausen, 2019). As the past has started to play a role in corporate-level marketing and communication purposes and its strategic interpretation has offered more and more opportunities for strengthening relationships with corporate stakeholders (Napolitano et al., 2018), corporate heritage marketing has emerged as a new academic field, in search of a shared theoretical framework to be explored in terms of its managerial implications (Riviezzo et al., 2021).*

Adopting a strategic perspective in the process of heritage marketing is essential for a firm to rediscover, affirm and enhance the system of values, resources, skills and events that are the basis of its identity. Heritage marketing is intended as an integrated set of activities starting from the analysis of potentialities of stakeholder engagement and ending in the choice of tools that can communicate the historic and cultural patrimony (Napolitano et al., 2018; Riviezzo et al., 2021; Riviezzo et al., 2015c). More specifically, the past is interpreted from an evolutionary perspective, looking to the future and able to motivate and involve the internal and external stakeholders in the company project.

At the operational level, the company could theoretically use any tools and activities that function in storytelling. The company can use multiple narrative tools to leverage the heritage assets and, in this way, better convey the multidimensional nature of the corporate identity to different stakeholders (Napolitano et al., 2018; Burghausen and Balmer, 2014). Drawing on our previous works (Riviezzo et al., 2016; Napolitano et al., 2018; Garofano et al., 2020;

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Riviezzo et al., 2021), we propose a classification of potential operational tools, reducing the heritage marketing 'kit' to four essential categories:

- *Narrating through words, images and sounds:* this includes all tools and activities where the story is expressed through words, images and sounds, regardless of the medium, e.g. from the most traditional 'paper-based' media - as the monography - to those using computerised technologies, such as websites and social networks.
- *Narrating through products and brands:* all activities carried out to position and communicate the brand and or the product through its heritage, particularly by leveraging evocative and emotional elements, such as historically symbolic brands, aspects of product design, and other elements that contribute to retro-branding and the revival or continuation of historical products.
- *Narrating through places:* this category refers to all the places and structures serving to preserve, enhance and transmit the company's historical memory, such as the original factories, headquarters and plant systems, and newly founded corporate museums and archives, as well as points of sale.
- *Narrating through celebrations and relationships:* this category includes events, celebrations of the crucial stages, milestones and personalities, and participation in associations and networking with historic companies at national and international levels.

Many of the actions used to develop the cultural-historic patrimony of companies would fit into more than one of the above categories. For example, implementing a museum would involve written and, perhaps, audiovisual material, as well as brand communication (Riviezzo et al., 2022). Likewise, the organisation of celebratory events would draw on materials from company archives. Our categorisation serves as an example and is not exhaustive, since the range of potential tools is infinite and subject to continuous innovation and development.

Purpose of the paper. *The present contribution focuses on the strategic and operational methods through which the past can be transformed into a competitive asset. Indeed, management scholars have widely investigated the antecedents of business longevity and its relationship with performance (Napolitano et al., 2015; Riviezzo et al., 2015), while scant attention has been devoted to strategies and tools necessary to enhance the historical and cultural heritage accumulated over time. Furthermore, the studies carried out to date on the topic are mainly based on the analysis of individual company experiences, while there is a lack of more far-reaching analyses aimed at detecting the degree of use of heritage marketing tools and methods on a large scale. Thus, even "basic" hypotheses are far from having been empirically tested. For instance, is it or is it not conceivable that the use of heritage marketing tools is influenced by the company's nature of family business? Considering that the entwinement between the history of the family and the company provides "a particular basis for firms to uncover, activate and nurture heritage-based corporate identities and brands" (Blombäck and Brunninge, 2013, p. 328) we can expect such a result, but empirical evidence is missing to date. Similarly, the answer to other questions is not clear and unambiguous: is there a relationship between company longevity and the use of heritage marketing tools? The complex relationship between history and heritage has been the subject of several contributions (Arnold et al., 1998). On the one hand, scholars highlighted how the mere fact of having spanned the decades gives a company and its products a special appeal (Burghausen and Balmer, 2014). On the other hand, scholars have recognized how even the traces of a shorter journey can be exploited through narrative elements capable of generating emotional involvement in the stakeholders (Riviezzo et al., 2021). Also, scholars emphasized that corporate heritage does not only reflect firm-specific elements but also embraces place-specific resources that are embedded in company products and may be communicated through heritage marketing tools, such as, for instance, a corporate museum (Rudd and Davis, 1998). In this perspective, the establishment of a corporate museum is even intended as an expression of the social responsibility of the firm (Bonti, 2014). Thus, does it make sense to hypothesize that the use of heritage marketing tools is influenced by the company's social responsibility? And, finally, it is known that the process of heritage marketing is very complex, both at the strategic and operational levels, and requires heterogeneous and specialised skills that may not be fully available within the organization (Riviezzo et al., 2021). Thus, can the use of heritage marketing tools be influenced by the company's availability of resources, in term of size and turnover?*

We used the categorisation of tools described above as a main guidance in investigating the most common and diffused tools used by Italian long-lived companies, but we limited the analysis to only part of the above-mentioned tools. Then, we tested the following hypotheses:

- *H1: the family nature of the business enhances the use of heritage marketing tools.*
- *H2: the longevity of the business enhances the use of heritage marketing tools.*
- *H3: the size of the business enhances the use of heritage marketing tools.*
- *H4: the social responsibility of the business enhances the use of heritage marketing tools.*

Methodology. *In order to identify the antecedents that can determine the propensity of long-lived companies to invest in communication tools for heritage enhancement, comprehensive desk research was conducted. This research aimed to gather detailed and up-to-date information on the primary heritage marketing tools and activities previously identified.*

In particular, the study focused on companies listed in the National Register of Italian Historical Firms edited by Unioncamere. All companies of any legal form operating in any economic sector, active, with uninterrupted operation within the same product sector, for a period of no less than 100 years can be enrolled in this Register (established by Unioncamere in 2011). We decided to focus only on active companies, in the form of joint-stock companies. In fact, we believed that for this type of business, the heritage marketing action could be more structured and robust. Furthermore, it was considered easier for these companies to find the necessary information from secondary sources, with desk research. Finally, in a first phase of the research whose results are presented here, we decided to further narrow the

sample, by focusing only on joint-stock companies that were large in size (annual turnover exceeding 50 million euros and number of employees exceeding 249). Using this additional restriction, 181 companies were ultimately identified. In this group, 77 are family businesses.

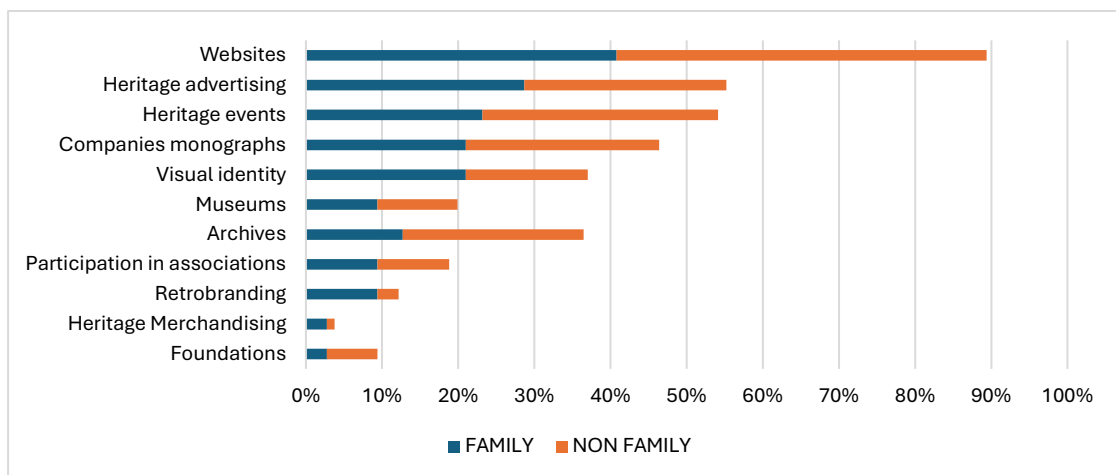
The historical companies under investigation operate mainly in the industrial sector (72.30%), services (29.81%), and commerce (7.75%). A residual portion is engaged in other activities, including agriculture and craftsmanship, representing 2,76%. Looking at the foundation year, the vast majority (72.9%) can boast a history ranging from 100 to 150 years. 20.44% have a history spanning from 150 to 200 years, while 3.30% can claim a history of more than two centuries. Finally, considering the geographical distribution of the investigated companies, they are primarily concentrated in the North of Italy (81.76%), followed by the Center (12.70%), and the South with a residual presence (5.52%). Specifically, Lombardia stands out as the region with the highest concentration of centenarian companies, accounting for 32.04 % of the total sample under investigation. Piemonte (14.36%) and Emilia Romagna (12.70%) are the following regions.

For each of the 181 historic companies identified, we followed a standard research protocol which allowed to collect the information necessary to investigate the use of the various heritage marketing tools from secondary sources. As a first step, the institutional website of each company was consulted. Subsequently, any institutional pages created on the main social networks and other websites possibly dedicated by the company to specific heritage marketing activities were consulted (for example, the website of the company museum, the archive and so on). Further secondary sources were then consulted to delve deeper into specific activities and initiatives. For instance, press articles (for events, anniversaries, awards or other initiatives promoted by companies) were widely used. Finally, external and specialized sources were used to support or integrate the information found on the company's website and social networks. For instance, to verify the possible presence of a museum, information were also sought in the database created by Museimpresa, the Italian association of business archives and museums; to verify the possible creation of an archive, the list of company archives in the National Archives System (SAN) was also considered; to verify the existence of a monograph, the database of the Business Monographs Observatory (OMI) was regularly consulted; and so on.

In line with the established aims, information on factors that could affect the use of heritage marketing tools were also collected from secondary sources (including the database Orbis by Bureau van Dijk). We collected information related to company's shareholder structure (assessed as a business owned by a family or not), company's longevity (measured in years of uninterrupted activity), company's size (measured in turnover), and corporate social responsibility (assessed through the regular publication of a social report).

Results. The results reveal a heterogeneous use of the different heritage marketing tools investigated, with companies' clear predilection for some more common tools and little attention to other tools. As shown in Figure 1, the companies under scrutiny mainly use their institutional websites to tell their story (89.5%). The main other tools used are events organized to celebrate special anniversaries and other historical occasions (54.14%), traditional advertising campaigns in the mass media, in which there are clear references to the historical and cultural heritage of the company (55.2%), and the use of visual identity to highlight the historicity of the company (37%). Also significant is the number of companies that have decided to tell their story in a corporate monograph (46.40%). Equally important is the increasingly widespread diffusion of business archives 36.46%, followed by corporate museums 19.88%.

Fig. 1: Frequency distribution of investigated companies by heritage marketing tools



If we focus exclusively on family businesses, it emerges a greater propensity to convey their narrative through videos and advertising, referred to as heritage advertising (28.7%). These companies strategically use visual identity (21%) to accentuate the historical significance inherent in both the family and the company. They also increasingly engage in retrobranding activities (9.4%). Thus, some differences seem to emerge based on the family nature of the business. And, in turn, this makes more interesting the analysis of the possible antecedents of the use of heritage marketing tools.

To this aim, we consider the number of tools used by companies as the dependent variable in a Poisson regression, which is an appropriate statistical model for count data.

Tab. 1: Estimates for the Poisson regression model

Variable	Estimate	Std. Error	Z value	p-value
Family Business	0.2115	0.0795	2.660	0.0078 **
Longevity	0.0011	0.0004	2.387	0.0170 *
Size	0.0282	0.0105	2.677	0.0074 **
Social responsibility	0.2947	0.0770	3.827	0.0001 ***

*** < 0.001 ** < 0.01 * < 0.05

Table 1 shows the results of the analysis. All the estimates have a p-value lower than 0.05, indicating that the considered antecedents have a significant impact on the use of heritage marketing tools. To evaluate their influence, we highlight that in the Poisson model the relationships are not linear, but multiplicative. This means that, for example, focusing on first explicative variable, if the shareholder structure is a family business, the expected number of heritage marketing tools is multiplied for 1.236 ($\exp(0.2115)$) respect to expected value for the not family business. Thus, the first hypothesis is supported. The same considerations can be done for the second hypothesis. When companies have a higher longevity, the number of tools increases (for each year a multiplicative effect of 1.0011 ($\exp(0.0011)$)). The multiplicative impact of the size (turnover) is about 1.0286. This supports H3. Also, with reference to the last estimate there is a positive multiplicative effect ($\exp(0.2947) = 1.3427$). This means that the presence of a social report enhances the use of heritage marketing tools, and this confirms H4.

Research limitations. The present work is not without its limitations. The analysis was conducted on a relatively large sample (181 observations), but one that takes into consideration only large companies. However, this is only the first step in a research path that aims to extend the analysis to small and medium-sized companies registered in the National Register of Historical Italian Historical Firms edited by Unioncamere.

Secondly, our analysis was underpinned by a diverse array of secondary sources, encompassing corporate websites, archives of various organizations, press reviews, and other pertinent outlets. Consequently, it's imperative to acknowledge the potential for missing data throughout this investigative endeavor.

Finally, it is important to note that the analysis conducted focused only on companies registered in the Register of Historical Firms, whose registration process takes place voluntarily, although subject to specific requirements. This implies that the study may not have considered other large Italian long-lived companies.

Managerial implications. Our results highlight how long-lived businesses, traditionally recognized as custodians of a unique historical and cultural heritage capable of guaranteeing a competitive advantage through a distinctive positioning, very often miss the innumerable opportunities linked to the enhancement of their deepest roots. In fact, companies approach the individual heritage marketing tools in an experimental way, without a transversal vision that allows them to exploit the different dimensions of the company's historical identity. In fact, as our data clearly pointed out, none of the companies investigated uses all the tools considered and there are very few (27%) that use at least one tool in the different categories mentioned above.

In a nutshell, therefore, our research pointed out that long-lived companies, despite their growing attention to the narration of corporate heritage, have not yet fully developed an integrated vision, placing heritage at the center of a communication strategy conveyed through multiple tools and channels. It is worth noting that the family nature of the business emerged as one of the variables explaining the increased propensity to invest in heritage marketing tools. In the specific case of family businesses, narrating both company and family history as strictly related to corporate heritage can be a means of managing the duality of continuity and change (Blombäck and Brunninge, 2013), highlighting how the family business has renewed over time without losing a connection with the past generations. It is also very interesting the relationship between the social responsibility of the company and the use of heritage marketing tools. Through the narration of company's heritage, corporate culture becomes collective culture, thus contributing to the development and transmission of local heritage, with clear benefits for the place and the community. The results show also that larger and more structured companies are the most oriented towards the exploitation of the company's heritage in terms of market relations, using more tools at the same time. This result is in line with the marketing literature that shows that smaller companies, in general, tend to implement marketing activities in a more informal and unstructured manner (Blankson et al., 2006; Riviezzo et al., 2013). Finally, although the literature clearly shows that the concept of "history" and the concept of "heritage" are separate (Arnold et al., 1998), with the consequence that a heritage marketing strategy can be pursued regardless of the age of the company, the results of this study lead to the assertion that the tendency to invest in heritage activities is greater in companies that are older. It is therefore conceivable that the focus on heritage marketing increases with the longevity of the company, especially with the attainment of certain milestones that often coincide with the first convinced investments in this direction (e.g. the publication of a monograph or the opening of a museum to celebrate the first 100 years).

Originality of the paper. This study is the first example of large-scale investigation aimed at observing the use of different tools of heritage marketing and the first attempt to identify possible antecedents at organizational level that may affect the use of such strategy. However, it is just the first step of a research process, which is aimed to extend the analysis

to other centenarian companies enrolled in the National Register of Italian Historical Firms edited by Unioncamere, also including medium and small-sized ones, and to investigate if the identified antecedents may affect differently the diverse categories of heritage marketing tools.

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Examining Healthy Food Consumption Among People Over 60 years

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Abstract

This research analyzes the perceptions, determinants and behavioral intentions regarding the consumption of healthy food among individuals aged over 60 years. Data collected through an online questionnaire distributed among the Italian population revealed a strong interest in healthy eating motivated by health benefits and personal well-being. However, some concerns about healthy food still represent barriers, which limit their current consumption. The study provides valuable insights for the development of interventions and communication strategies, acting at different levels (i.e., health-care professionals and food companies) aimed at promoting healthy ageing of population and the overall social well-being.

Keywords: healthy food; elderly people; social well-being; food consumption.

Framing of the research. *Over the time, food consumption has undergone significant changes under the influence of several factors such as cultural shifts, economic developments, and technological advancements. One of the biggest changes has been the gradual recognition of health as a fundamental motivator of food choices (Cena & Calder, 2020). Indeed, as individuals have become more informed about the connection between dietary habits and overall well-being, there has been a significant increase in prioritizing health in food consumption (Saba & Vassallo, 2012). The Global Health and Wellness Survey carried out by AC Nielsen (2021) on consumer sentiment across 17 diverse global markets revealed that 39% of global population is overweight, 2.8M die each year as a result of being overweight and 21% of global consumers have shifted health priorities because they have gained unwanted weight.*

The reasons why health has become an essential priority range from the desire to live longer and to look and feel better, to the sway of social media and the burden of rising costs of healthcare (AC Nielsen, 2021). Moreover, the continuous accumulation of food scandals over the past decades, like the BSE occurring in the mid-to-late 1990s in the UK, the German dioxin scandal in 2011, and the presence of salmonella in certain infant milk-products in 2018, have further contributed to the increasing interest in health-related issues. That's why, Governments and regulatory bodies "have gradually improved their common responsibility and interest in preventing public health problems related to the food chain" (Thomopoulos et al., 2022), by promoting initiatives and practical recommendations in which healthy diet is essential for good health and nutrition (Lambrinou et al., 2013; Patience, 2016). As an example, North America updated FDA guidelines to set voluntary sodium limits for 160+ categories of processed foods with the goal of helping consumers cut their salt intake by 12%, while France and Germany are introducing new labelling initiatives, to provide more clarity on the health effects of their contents, within the overall European "ecolabel" strategy timed for 2024.

People often classify food as either healthy or unhealthy based on factors like perceived fat and sugar content, and the presence of artificial ingredients, which results in a growing avoidance of products such as red meat, sweets and animal fats, and an increasing demand for fruits, vegetables, eggs and fish, or less processed foods like whole grains (Skerrett & Willett, 2010). Frequently, also organic and functional foods have been perceived to be healthier and more natural than conventional ones (Alkhatib et al., 2017). This outlines two main suggestions. First, the concept of healthy food cannot be univocally defined, as it varies according to the individual perception and the focus of attention. Past literature clearly reveals this diversity, as some scholars have related healthy food to a balanced diet full of proteins, carbohydrates, and fats, moderation and regularity in food consumption and meals control, increasing fruits and vegetables eating and reduction of high-fat food intakes (Paquette, 2005; Krahn et al., 2011; Bisogni et al., 2012), while others associated healthy food to the avoidance of specific cooking habits, such as fried meals (Povey et al., 1998). The second suggestion emerging from the current research on healthy food consumption deals with the relationship between healthy and sustainability. As noted by Machin and Chen (2023, p. 9), foods that are "positioned as having some kind of health benefit often also combine ethical consumption ideas, such as 'natural,' 'organic,' 'sustainable,' 'local,' or 'recyclable'". That is, consumers tend to associate sustainability with higher perceived health (Verain, et al., 2016) since they "often encounter health and sustainability together in products" (Cho & Baskin, 2018) as it emerged in several studies on vegetarian meals (Kareklas et al., 2014), organic (Petrescu & Petrescu-Mag, 2015) and regional food, i.e.

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food growing in the surrounding region that are believed to be healthier, fresher and more sustainable than conventional one (Savelli et al., 2022). Therefore, the consumption of healthy food is a central topic in modern society, as it improves both sustainable development and long-term well-being of the population.

Consuming healthy food is particularly important in the early child period of life to support optimal growth and development (Welker et al., 2018). However, it becomes increasingly important also in the later stages of human life cycle, when population ages, since elderly people are particularly vulnerable to health issues and dietary-related diseases (Joyce et al., 2005). Previous research has highlighted the need for continuous education on health risk factors and the importance of seniors taking responsibility for their own health (Cho & Kim, 2022; Ishida et al., 2020). Therefore, dietary education, meal service, and various dietary interventions improving fruit and vegetable intake, dietary variety, and physical condition in older adults, have been recognized to be critical to promote healthy eating and the overall quality of life (Zhou et al., 2018).

Despite this evidence, there is a lack of studies that delve into emotional, behavioral, and motivational factors orienting dieting habits of elderly people towards food selection (Carfora et al., 2022). Moreover, they often focused on specific product categories, such as fruit and vegetables (e.g. Appleton et al. 2017), protein (Linschooten et al. 2021), and beans (Doma et al. 2019), thus reducing the results' generalizability, and usually considered the elderly population as a whole, without analyzing specific sub-groups with different food choices and habits (Caso and Vecchio 2022).

In addition, it must be said that past research often provided contradictory findings, especially when comparing elderly food behaviours with younger ones. For instance, some scholars have shown a bigger consumption of sugary and fatty foods in younger people than in elderly ones (Bleich et al., 2018; Nour et al., 2017), while others demonstrated that younger generations are highly interested in health benefits and natural contents of foods, despite their attention to the convenience of preparation and availability of food products, in terms of price and distribution (Mitic & Vehapi, 2021). What seems to be significant in explaining the differences between young and elderly people is the underlying motivations driving healthy food consumption, as adults and elderly are mainly driven by a deep sense of consciousness about health-related consequences of food choices, while proper nutrition and health education is naturally engaged in young people's mind, since they grew up in a social environment driven by a strong sense of responsibility (Savelli et al., 2023).

All this suggests the opportunity to improve the current state of knowledge on healthy food consumption among the elderly generation, by investigating their attitudes, consumption patterns, and perceived benefits and barriers associated to healthy food choices, in order to provide valuable insights for developing interventions and strategies enhancing their overall health and well-being.

Purpose of the paper. This study aims to fill the existing gap by examining the perceptions, determinants, and behavioral intentions regarding healthy food choices of elderly people, ultimately contributing to the development of effective interventions and policies. More specifically, the study addresses the following research questions:

RQ1: How do elderly people perceive healthy food? Do they knowledge the properties of healthy food and what benefits and barriers associate to it? Are they satisfied with their past consumption experience and intend to consume healthy food in the future?

RQ2: Are there any differences among consumers aged over 60 years towards healthy food based on their individual characteristics (i.e. gender, age, body weight condition)?

Methodology. Data for this study have been collected through an online self-administered questionnaire, distributed over a six-month period (September 2023-March 2024).

The survey was conducted online using the computer-assisted web interview (CAWI) method given its efficiency, cost-effectiveness, respondents' anonymity, broad geographic reach, and comprehensive data collection (Kraut et al., 2004; Sowa et al., 2015; Thompson et al., 2003). Specifically, the online questionnaire was shared on social media platforms such as Facebook, Instagram, LinkedIn, WhatsApp, and Telegram.

The sampling procedure was based on a convenient non-random sampling method, considering the Italian population aged over 60 years. Data from ISTAT (2023) have been considered for calculating the Italian population by age, whilst the appropriateness of the sample size was checked by applying the Brasini et al.'s (2002) formula:

$$n = [Z^2 a/2 \times N] / [4(N - 1)\theta^2 + Z^2 a/2] = [1.96^2 \times 17.706.146] / [4(17.706.146 - 1) \times 0.05^2 + 1.96^2] = 384$$

where n =sample size; $Z^2 a/2$ =confidence level=1.96 (calculated using the tables of the standard normal distribution); N =Italian population aged 60-90 years at 01/01/2024=17.706.146 (<https://demo.istat.it/app/?i=POS&l=it>); θ =margin of error allowed (set at 5%).

The data collection process resulted in 334 valid responses at 01/03/2024. The number is still under the threshold suggested by the above formula. However, it is very close to it and therefore acceptable, also considering the ongoing process of the research.

As for the questionnaire, it was divided in four parts. The initial part focused on understanding individuals' knowledge of healthy food and the main sources informing them. The second part focused on motivators, benefits and barriers related to healthy food consumption. The third part examined respondents' satisfaction about healthy food as well as their future behavioral intentions. Lastly, demographic data including age, gender, level of education, and family status were collected. Information on body weight and height have been included in this section to assess the Body Mass Index (BMI), as it is significantly correlated with dietary patterns (Bion et al., 2008).

All the questionnaire items have been carefully chosen and adapted from previous research to assure their content validity. In particular, items for knowledge, satisfaction and behavioural intention have been taken from Lee et al.'s (2018) scales that had already been validated in previous research. Motivations and information sources influencing

healthy food consumption have been defined in line with the '2017 Food and health Survey' provided by the International Food Information Council (IFIC) Foundation, which has been taken in several other studies. Finally, both benefits and barriers associated with healthy food consumption were assessed by using the multi-items-lists of Pawlack and Colby (2009). The responses were measured on a 7-point Likert scale, with 1 representing exceptional disagreement (or unlikely) and 7 representing exceptional agreement (or likely).

Before starting the data collection, the questionnaire was pre-tested by involving a group of academic researchers having a deep knowledge and expertise on both the research subject of the survey and the methodology (i.e. how to collect the most accurate data for our research questions). This allowed us to check the content and form of the questionnaire, improving its comprehension, flow and logic, and length acceptability.

The collected data have been analysed with STATA (StataCorp LLC, 4905 Lakeway Drive College Station, Texas 77845 USA), version 17.0. It is a general-purpose statistical software package for data manipulation, visualization, statistics, and automated reporting, widely used in many research fields, including biomedicine, economics, epidemiology, and sociology. In this step of the research, only descriptive statistics (based on mean values, standard deviations and frequencies) were used to gain a preliminary and exploratory overview of the research topic.

After describing the general characteristics of the sample, we investigated the main results concerning healthy food knowledge, satisfaction, and behavioural intention. Moreover, the main motivations, benefits and barriers have been described to identify potential healthy food patterns characterizing this generation (RQ1). Next, to address the second research question of this study (RQ2), we divided the sample into sub-groups based on gender, age and body weight (i.e. BMI), in order to detect the existence of any differences between them.

Results. Starting from the demographic data, 166 men and 168 women participated in this study, ranging from 60 to 91 years old, with an average age of 68 years. About one third of the participants (96) come from northern Italy, 196 live in the central regions and 42 in the southern part of the country. Most respondents have a high school (163) or a middle school diploma (82), while only 55 participants have a bachelor's or master's degree; the remaining subjects attended just the elementary school (34). Regarding the body mass index (BMI), calculated as $\text{mass}(\text{kg})/\text{height}(\text{m})^2$, the data ranged from a minimum of 17 to a maximum of 41, with an average value of 24,5 (s.d.: 3.3), suggesting an overall tendency of the elderly population to be normo-weight³.

As concerning the individual knowledge of healthy food, more than 60% of the sample responded with a rating of 5 or higher when asked how much they think to know about it. This is a positive result, which foreshadows a favorable attitude by the elderly towards healthy food consumption. Indeed, prior research has empirically demonstrated that knowledge about good nutrition can directly affect personal eating habits, encouraging the adoption of a reduced healthier diet (Trepka et al., 2006). The main sources used to acquire information by the elderly appear quite heterogeneous. They seem to be particularly receptive to dietary advice from health professionals, whereas other sources of information do not always succeed in convincing them. More in detail, 77.5% of the sample responded with a value of 5 or higher to the question on how much they trust the advice of dietitians, while 31.7% declared to trust the advice of bloggers, 29.6% the advice of friends or family, and 38,3% declared to have confidence in newspaper articles. This confirms prior research highlighting the highest confidence of elderly generations in the opinion and recommendations from specialists for matters relating to food (Borges-Tiago et al., 2016).

The second section of the questionnaire investigated the main motivations, benefits and barriers associated to healthy food consumption. Based on the answers, the attention towards these foods mainly comes from the individuals' concern about their health condition (mean: 6.1; sd: 1.1) and potential diseases, followed by health care professionals (mean: 5.3; sd: 1.4). Hence, the motivation for healthy food consumption relies more on the occurrence of a contingent condition rather than a natural preference and attitude towards it. This confirms prior research findings suggesting that a poor health status is a major factor behind elderly's food choice, as health problems increase people's concern for long-term wellbeing (de Morais et al., 2010). Responding to the perceived benefits, the main aspects coming out from the survey were the sensation of feeling good (mean: 5.9; sd: 1.1), taking care of one's body (mean: 6.0; sd: 1.1), and weight loss (mean: 5.4; sd: 1.4). Specifically, 68.8% of the respondents rated the first factor with a value of 6 or 7; 70.6% rated 6 or 7 the second factor, and 51.8% rated 6 or 7 the third factor. As for the barriers, the price does not seem to be a relevant factor: only 56% of the respondents assigned a value greater than 4 to the question "Healthy foods are too expensive". Similarly, poor appreciation of healthy food by other family members who live with the elderly do not seem to be significant barriers. On the contrary, many participants declare not to like the taste of healthy food: 75% responded with a value above 4 to the question "Healthy foods do not taste good", suggesting that, when barriers to healthy food consumption occur, they are mainly related to people's own hesitation. This result corroborates prior studies (Bloom et al., 2017; Tani et al., 2015) revealing the importance of taste and enjoyment in elderly food choices, which often results in unhealthy food choices with negative health consequences.

Finally, the questionnaire attempted to investigate the degree of satisfaction and behavioral intention of elderly people in consuming healthy food. The results show that the majority of respondents are satisfied with the consumption of healthy food they usually eat (mean: 5.08; sd: 1.58). Moreover, respondents have shown a positive behavioral intention towards healthy food, since they generally intend to keep eating such foods (mean: 5.41; sd: 1.55), to recommend them to personal

³ The World Health Organization classifies the BMI status for adults in agreement with the International Obesity Task Force (IOTF) criteria: BMI<18.49: underweight; 18.5<BMI>24.99: normal range; 25<BMI>29.99: pre-obese; BMI>30: obesity. https://ec.europa.eu/health/ph_determinants/life_style/nutrition/documents/iotf_en.pdf

friends (mean: 5.13; sd: 1.63), and to increase the future intake of healthy food in their dietary habits (mean: 5.43; sd: 1.57). This confirms that the more elderly people are acknowledged about healthy food properties, perceive their benefits and are well satisfied, the more they are prone to consume healthy food and to adopt a healthy eating behaviour (Caso & Vecchio, 2022).

To provide more knowledge about the dietary patterns of elderly people, this study explored whether individual characteristics of the respondents have significant impact on the variables previously analyzed, i.e. knowledge of healthy food, motives, benefits and barriers, satisfaction, and behavioral intention.

The comparison has been made using the percentage of very high responses (value of 6 or 7) compared to the total responses.

Firstly, the analysis compared men and women. Regarding the individual knowledge of healthy food, only 33% of men responded with a very high value, compared to 42% of women. The sources they use are quite different: women tend to prefer the advice of health care professionals (53%; men: 49%) and dieticians (63%; men: 54%), while men believe more in the advice of bloggers (17%; women: 14%) and newspaper articles (15%; women: 14%). There are no major differences regarding the main motivators and barriers for adopting healthy food, while regarding the benefits it provides, women compared to men responded that healthy food helps them feel better (77%; men: 61%) and taking care of their own body (74%; men: 67%). Furthermore, satisfaction with the consumption of this food is higher in women than men (55%; men: 41%), as also results in their behavioral intentions: women generally intend to keep eating healthy food more than men (60%; men: 50%), to recommend them more (59%; men: 40%), and to increase the future intake of healthy food more (64%; men: 47%). All this confirms prior research on the elderly generation revealing that women tend to be much more involved than men in healthy food consumption as they have better nutritional and health knowledge than men (Ueland, 2009).

Secondly, we divided the ages into quartiles and compared the first quartile, made up of participants between 60 and 62 years old (under62), and the fourth quartile, made up of participants between 71 and 91 years old (over71). There is not a big difference in the answers on individual knowledge of healthy food (41% under62 - 38% over71). The greatest difference between the sources used for information concerns the use of bloggers as informant sources (28% over 62 - 5% over 71). No relevant difference between reasons, benefits and barriers towards the consumption of healthy food have emerged. Satisfaction is higher for subjects over71 (56%; under62: 42%) as well as behavioral intention is: they generally intend to keep eating healthy food more than under62 (61% - 49%), to recommend them more (56% - 42%), and to increase the future intake of healthy food more (62% - 52%). Probably, the individual intention increases with age, since elderly people become more aware and worried about their personal health and long-term wellbeing.

Finally, we divided subjects into quartiles based on BMI similarly to what was done for age: the first quartile is named as under22.5 and the last quartile is named as over26.3. Regarding the individual knowledge of healthy food, the high answers are equivalent, however the sources used by the respondents are different: under22.5 trust more dieticians (62% - 50%) and bloggers (20% - 5%) while the group over26.3 trust friends more (21% - 13%). Regarding the reasons that push these subjects to consume healthy food, subjects over26.3 are more worried about their health and potential diseases than subjects under22.5 (76% - 68%), and they listen more to health care professionals than the others (58% - 45%). Besides, this group (over26.3) is more sensitive to benefits such as feeling better (70% - 65%) and taking care of their body (74% - 62%). However, the over26.3 group also perceives healthy food as too expensive (21% - 18%) and not tasty (20% - 18%). In conclusion, satisfaction and general behavioural intention are similar in these two groups. This leaves open the debate on the relationship between BMI and healthy food consumption, suggesting the opportunity to further investigate the "directionality of this relationship, i.e. whether these shopping preferences habits cause overweight and obesity or whether overweight causes people to shop in this manner" (Worsley et al. 2011, p. 877).

Research limitations. Based on the findings of this study, it is evident that elderly people exhibit a strong interest in consuming healthy foods, driven by various factors including their perception of health and personal well-being benefits. However, this research is not sufficient to explain all the reasons that push this age group to eat healthy food. Firstly, the main limitation arises from the adopted sampling procedure. Employing a convenient non-random sampling technique and disseminating the survey through a weblink offered advantages such as quickness, low cost, and anonymity of respondents. However, this approach does not allow for complete generalizability of the study results. Additionally, the analysis was conducted only among Italian people, therefore, specific socio-cultural factors may have influenced the obtained results. Concerning the findings, further analyses are needed, based on multivariate techniques (such as regression and clustering) and validity tests. Finally, another limitation arises from the quantitative nature of the research. While quantitative methods enable the reaching of a large sample of respondents and allow for the generalizability of results, they often lack depth. Therefore, for future research, it would be beneficial to explore qualitative approaches that incorporate both generalizable and in-depth results.

Managerial implications. Overall, the findings of this study provide valuable insights for managers seeking to promote healthy eating among individuals over 60, emphasizing the importance of tailored communication, leveraging trusted sources, addressing taste perceptions, and highlighting the benefits of healthy eating to encourage long-term adherence.

Specifically, despite the good level of self-perceived knowledge, communication strategies and education programs could be improved to enhance the overall acceptance of healthy food by elderly people and their positive attitude towards its consumption. In particular, this study provides suggestions in terms of both communication channels and information content. As for the channels, elderly people tend to trust in health care professionals, such as dieticians. This probably relates to the fact that they usually associate healthy food consumption with health and disease prevention. Therefore,

health professionals should improve both informal communication, by dedicating more time to their patients in face-to-face meetings, and public campaigns aimed at reinforcing the importance of a healthy diet, its benefits for long-term well-being and the need to include healthy food in daily habits. In this respect, for example, organizing local “special days” dedicated to health, where participants can take advantage of some medical services (e.g. free blood pressure measurement), could play as an opportunity to offer information sessions enriching the elderly interest in healthy eating and their desire to change unhealthy habits. This could be particularly effective with elderly women, that seem to be more sensitive to professional information, as well as with those elderly that are over-weight, as it emerged from our data. Traditional channels, like newspapers, and digital ones, like bloggers, could also be useful to inform people over 60 years about healthy food benefits, especially in the case of men and the younger age groups of the elderly. Anyway, this study highlights the importance of understanding the credibility of information sources for promoting healthy eating among adults and older individuals.

By considering the information content, two results are particularly worthy of evidence. Firstly, the concern about taste is an important point to analyze as it emerged among the main barriers to healthy food consumption, especially in the case of over-weight people. Efforts should be made to address taste perceptions and make healthy food more palatable to this population, potentially through innovative cooking techniques. In this respect, also food companies could contribute by offering flavor enhancements and, especially, local ingredients addition. Indeed, as elderly people are particularly attached to their history and eating traditions, the use of some local ingredients, such as ricotta cheese, honey, and San Marzano tomatoes, could taste better on their tongue, thus remaining for a longer time on their mind. Secondly, the comprehension of the main motivators and benefits underlying healthy food consumption provides further suggestions on how to orient the communication efforts. Overall, elderly people recognize health-related advantages in healthy food consumption, such as prevention diseases and weight loss. Therefore, communication campaigns should focus mainly on these benefits, by communicating, for example, that healthy food could act as a substitute of the medical treatments, providing easier solutions to common diseases such as obesity, diabetes, and high cholesterol. However, since women appeared to be more interested than men in their physical appearance, communication should provide targeted messages to catch their attention based on different information and tone contexts which rely mainly on these potential advantages related to healthy eating. Moreover, it could be useful to reinforce information on healthy food within the retail context, since women tend to attend food stores more frequently than men (Worsley et al., 2011).

Originality of the paper. In conclusion, this study enriches prior knowledge on elderly people and healthy food consumption in different ways. First, it provides valuable insights into the comprehension of individual attitudes and behavioral intentions of elderly people towards healthy food consumption, which has been less investigated by previous literature. Notably, it moves the attention from situational (e.g. physical and cognitive status, living condition, social support, etc.) and socio-cultural variables (e.g., income, education, geographical area, etc.) to cognitive (i.e. ‘perceived benefits and barriers’, ‘knowledge about healthy food’) and emotional factors (i.e. ‘satisfaction’) explaining the elderly intention to consume healthy food. These variables have been scarcely analyzed, while being extremely important to understand the elderly consumers’ information processing, behaviours and purchasing intentions (Bagozzi et al. 1999; Bully et al. 2015). Second, the present study attempts to analyse the differences among sub-groups of elderly people. Extant literature demonstrated that this generation is quite heterogeneous, with significant differences in healthy food patterns according to their health status and socio-demographic conditions (Guido et al. 2022). Therefore, it is interesting to investigate such diversity, to provide more specific suggestions to healthcare professionals and policymakers aimed at developing targeted interventions promoting healthier eating habits and the overall improvement of health outcomes of elderly population.

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The new dimension of brand in ‘metaverse’: a structured literature review

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Abstract

This study has the aim to verify the actual evolution of brand in the context of metaverse. The latter represents a new dimension where companies and organizations need to redefine their customers’ relationships, inside a total virtual experience. Metaverse could be the latest challenge, connected to other technological developments, to improve the brand policy. The research, being a structured literature review, takes into account more than 50 papers published over the 2006-2022 timeframe. Five main clusters were identified with theoretical and managerial implications. In particular, the results show as the metaverse could play a strategic role in improving the consumer experience through the virtual world.

Key words: *brand; metaverse; virtual worlds; metaverse marketing; structured literature review.*

Framing of the research. *The technological innovation always played an important role in the evolution of marketing. Actually it is possible to observe the introduction of new instruments, as the metaverse, that could have a concrete impact on the consumer experience. The latter marks the most recent and definitive transition from the physical world to the virtual world, after previous experimentations that were not so totally immersive as the last one. Metaverse represents a complete experience in a not traditional environment but, only in recent years, companies and organizations are concretely testing this improved context. One of the reason of what above mentioned is due to the constant improvement of connections and smartphones, since operations in the metaverse require a fast connection and devices able to manage huge quantities of megabytes. This evolution, being at the beginning, needs to be deeply studied and explored by scholars and practitioners, to highlight the real potential. The leap into the metaverse can concern various marketing strategies/actions, including those linked to the brand. The framework of this research is structured on the papers that will be analyzed below, whose attention is focused on the impact of metaverse on branding.*

Purpose of the paper. *The aim of this structured abstract is threefold. First, this study seeks to extend the research in brand management when ‘metaverse marketing’ is concerned. Second, it provides the state of the key research blocks involving the defined research areas to make a complete picture of the phenomenon under investigation. Finally, a research framework related to the main drivers of the metaverse exploration, as well as future directions for both scholars and practitioners, will be presented. In this way, relevant insights on how metaverse can be employed in brand management practices and consumer behaviour strategies will be provided. Therefore, the paper aims to address to the following research questions:*

RQ1: What is the state of the art in the field of brand and metaverse?

RQ2: What are the key research blocks related to brand strategies in the metaverse?

RQ3: What are the future research directions when brand management is applied to the metaverse?

Methodology. *In order to answer to the defined research questions, a structured literature review (SLR) was performed in the field of brand management and metaverse. This methodology allows to systematise and categorise the state of the art on a specific topic (Vrontis et al., 2020; Vrontis and Christofi, 2021). To better address the research questions the search keywords were identified by analysing the metaverse concept across several studies and sectors. Following Hollensen et al. (2022), the metaverse is defined as an aggregation of virtual worlds. Therefore, the term ‘metaverse’ was integrated by a more extensive interpretation such as ‘virtual worlds’, for this reason the main search keywords resulted in ‘brand’, ‘virtual worlds’, and ‘metaverse’. For data collection, the Scopus database was employed as it is considered the most used instrument by scholars. The search process followed three steps: identification, screening, and inclusion. A sample of 142 published articles was retrieved from the Scopus database from 2002-2022*

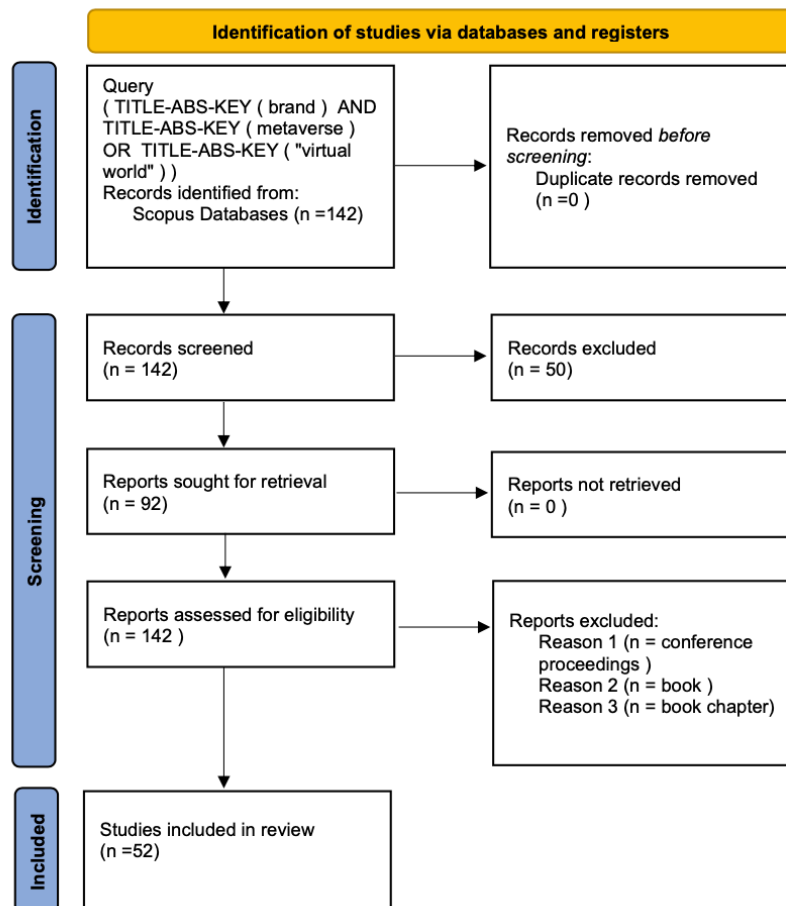
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by setting the following research query: TITLE-ABS-KEY (brand) AND TITLE-ABS-KEY (metaverse) OR TITLE-ABS-KEY (“virtual world”). A set of exclusion criteria was defined in order to effectively address the study aims and research questions. Consequently, books, book chapters, and conference proceedings were excluded, and papers not coherent with research topics, publication type and language (Kauppi et al., 2018) with a further abstract reading. Thus a final sample of 52 published articles was defined for the final analysis, as described in the Figure 1.

Figure 1 – Search strategy

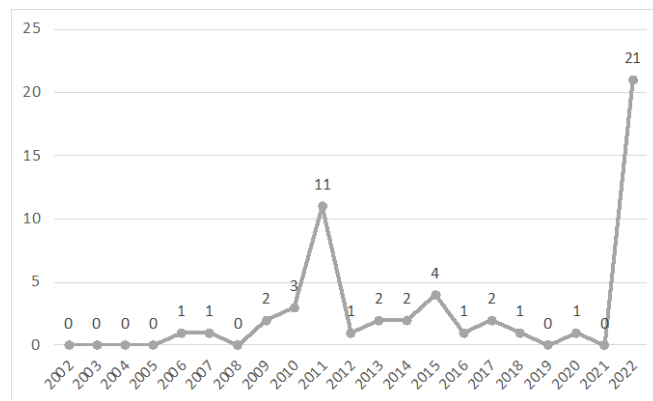


The analysis was developed in three steps to answer our research questions and provide an in-depth understanding of the phenomenon under study. First, a descriptive analysis was used to present the sample’s publication and citation structure, as well as the most influential contributions. Then, a cluster analysis and a content analysis were performed based on a bibliographic coupling method, highlighting exciting research areas. Following others’ contributions (Del Vecchio et al., 2021; Khan et al., 2020; Van Eck and Waltman, 2017), VOSviewer software was adopted for the graphical mapping of the bibliometric data in terms of collaboration and citation connections.

Results.

Descriptive analysis - The goal behind the descriptive analysis was mainly to rank the sample by the number of publications per year, geographical analysis of authorship, number of citations, common keywords, and the identification of the most influential authors. Regarding the distribution over the years, Figure 1 displays the number of published articles over the 2006-2022 timeframe. In particular, the graph shows that the first article was published in 2006 and was the sole publication for that year. The same scenario is evident in the following period, followed by the absence of contributions in 2008. Moving from 2009 to 2011, an increased number of publications was observed, with a peak in 2011 with eleven articles. However, in 2012, there was a drastic drop in the number of publications, followed by a sinusoidal trend in which, after a modest number of published articles, a considerable peak was observed in 2022. These findings demonstrate how the literature on metaverse and virtual worlds began to flourish recently, thus explaining its fragmentation over time. Due to its topicality, the increased number of contributions in recent years is linked to the greater awareness and interest in the subject by academics and practitioners, together with its potential applications in various fields.

Figure 1. Publications Trend



The distribution of articles per country and the number of citations per country were considered to analyse the articles' geographical area (Tab. 1). The count considered the involvement of a country (per university/research institution) in the authorship of the articles. For example, if an article was developed by the cooperation of several countries, the software will assign each country one point. In this way, it was possible to understand which countries have ever shown interest in studying the understudy topic. Furthermore, to get a complete picture, we cross-referenced data on authorship and the number of citations by countries and compared their rankings. Data revealed that the United States, the United Kingdom and Australia ranked first, second and fifth in both the number of contributions and the number of citations. In detail, the United States count 18 published articles and 509 citations, followed by the United Kingdom with 10 published articles and 130 citations, while Australia closes the top five chart with 3 published articles and 38 citations. Although several countries have expressed their interest in the subject, it seems that the United States represents the most influential country. This result could be related to the American nationality of virtual industry giants, being Silicon Valley the place where the metaverse was born and developed. However, the more this environment develops, the more it is likely to spread to other states. Therefore, possible changes of scenario must be taken into account for the future.

Table 1. Top five countries per publications and citations

Ranking		N. of documents		N. of citations
1	United States	18	United States	509
2	United Kingdom	10	United Kingdom	130
3	China	4	France	85
4	Germany	3	Denmark	57
5	Australia	3	Australia	38

Table 2 highlights the top three academic journals in which the papers included in the sample were published. Studying where articles are published represents an important indicator, especially for researchers and authors (Del Vecchio et al., 2021; Dumay and Cai, 2014). So far, the top-ranked journals are Linguistic and Philosophical Investigations (six publications), Journal of Brand Management (five papers), and Journal of Marketing Management (two articles). The ranking shows us a high level of heterogeneity, as topics range from brand to marketing management, with an investigative perspective.

Table 2. Top three journals sources

Scientific journal	N. of paper
Linguistic and Philosophical Investigations	6
Journal of Brand Management	5
Journal of Marketing Management	2

As for the most cited papers, Table 3 confirms the geographical interest around this topic from the United States and the United Kingdom mentioned before. Following previous SLRs (e.g., Massaro et al., 2016; Armstrong et al., 2013), the articles were ranked using citations and CPY (i.e., citations per cited paper per year), showing Nah et al. (2011) as the most influential one, while the publications of Hemp (2006) and Barnes (2007) are in second and third place respectively. The most common keywords resulted in 'virtual worlds', 'virtual reality', and lastly, 'metaverse', demonstrating a temporal shift towards the metaverse concept. Indeed, the metaverse is defined as an aggregation of virtual worlds (Hollensen et al., 2022), moving the research from singular virtual worlds (i.e., Second Life) to a multitude of platforms (e.g., Roblox).

Table 3. Top three articles per citations and cpy

Ranking (citations)	Authors	Title	Year	Source title	Country	Cited by	CPY	Ranking (CPY)
1	NAH, F. F. H., ESCHENBRENNER, B., & DEWESTER, D.	Enhancing brand equity through flow and telepresence: A comparison of 2D and 3D virtual worlds	2011	MIS Quarterly: Management Information Systems	United States	248	20,16	1 (-)
2	HEMP P.	Avatar-based marketing	2006	Harvard Business Review	United States	209	19,92	2 (-)
3	BARNES S.	Virtual Worlds as a Medium for Advertising	2007	Data Base for Advances in Information Systems	United Kingdom	57	5,18	3 (-)

Cluster and content analysis - In order to provide an in-depth understanding of the leading research areas, the 25 papers identified by VOSviewer were grouped into eight clusters. Due to the thematic fragmentation of the topics examined, a content analysis was performed by each researcher individually. Then, a discussion followed, and a reclassification into more homogeneous groups resulted in five remaining clusters. In fact, the topic “Virtual Worlds” was examined across different perspectives such as company-brand-consumer, institutions and brand value-extension. These topics were further investigated among different environments such as: real-world, 2D and 3D virtual worlds and concerning several phenomena. Ultimately, five main clusters were identified such as (1) Brand management and consumer behaviour in virtual worlds; (2) Virtual worlds as a laboratory-like environment; (3) Virtual worlds’ impact on brand-consumer phenomena; (4) Multi-perspective approach of virtual worlds’ technologies; (5) Brand Value in virtual worlds (Table 4).

Table 4 - Final clusters based on research areas

Research area	Authors
Brand management and consumer behavior in virtual worlds	Goh and Ping (2014), Jin and Lee (2010), Palomba (2020), Bames (2007).
Virtual worlds as laboratory-like environment	Belei et al. (2011), Hansen (2013), Jankowski et al. (2018), Singh et al. (2015), Cipresso (2015).
Virtual worlds impact on brand-consumer phenomena	Hassouneh and Brengman (2011), Huang et al. (2013), Melancon (2011), Ramanathan and Purani (2014), Crick (2011), Goel and Prokopec (2009), Gabisch (2011), Gabisch and Gwebu (2011).
Multi-perspective approach of virtual worlds’ technologies	Dwivedi et al. (2022), Kliestik et al. (2022), Rauschnabel et al. (2022).
Brand value in virtual worlds	Barnes and Mattsson (2011), Barnes et al. (2015), Muzellec et al. (2012), Nah et al. (2011), Pamment (2011).

The thematic areas are discussed more thoroughly as follows:

- Brand management and consumer behaviour in virtual worlds. In this group, authors mostly examined the brand-consumer relationship concerning brand experience within Virtual Worlds and potential impacts on consumer behaviour such as attitudes, gratifications, relationships, trust and satisfaction. In these cases, virtual worlds were primarily treated as another environment in which the relationship brand-consumer occurred in terms of consumer experience, and its outcomes were analysed through variables related to satisfaction, trust and loyalty (Jin and Lee, 2010; Palomba, 2020). Moreover, special attention toward advertising was observed (since gaming was one of the first virtual worlds’ experience). Scholars focused on advertising effectiveness in gaming situations treating attitude formation, and behavioural intentions (Goh and Ping, 2014; Barnes, 2007).
- Virtual worlds as a laboratory-like environment. This cluster was characterized by a particular focus on virtual worlds employed as a tool to perform experiments related to behavioural dynamics (Singh et al., 2015; Cipresso, 2015) modelling a virtual replica of real-world environments where several experimental conditions may be controlled and standardized. In addition, virtual worlds were used to analyse the effects of marketing actions, brand strategies and consumers’ responses through simulations within more manageable virtual environments (Hansen, 2013; Jankowski et al., 2018).

- *Virtual worlds impact on brand-consumer phenomena. This resulted in the most numerous cluster. In fact, most of the authors investigated virtual worlds as a relevant driver, able to influence several dynamics related to brand strategies and opportunities' creation (Ramanathan and Purani, 2014; Melancon, 2011); marketing strategies and consumer behavioural changes such as attitudes and trust (Goel and Prokopec, 2009; Gabisch, 2011; Gabisch and Gwebu, 2011). Lastly, there is evidence of a first sectorial orientation (toward tourism) to better understand how virtual worlds may affect the hospitality industry and its implications for physical places' value extension on virtual environments (Crick, 2011; Huang et al., 2013). In this cluster emerge a potential new concept such as 'metaverse marketing', that is defined here as 'the marketing practices employed in the metaverse'.*
- *Multi-perspective approach of virtual worlds' technologies. This cluster denotes a terminology shift from 3D and virtual worlds to the metaverse. Primary, this is explained by the time of the papers' publication (2022) when the term spread extensively among scholars and practitioners. Moreover, in this multi-perspective narrative, there was a focus on complexities, factors and challenges that may involve consumers (intended as users) and brands (Dwivedi et al., 2022). Also, scholars made efforts to explore the metaverse through an overview of previous literature in an attempt to define the status quo of the research by providing essential insights for future analysis of the metaverse since the phenomenon is at its hype (Kliestik et al., 2022; Rauschnabel et al., 2022).*
- *Brand Value in virtual worlds. In the last group, scholars examined virtual worlds as a factor affecting brand value. The attention focused on the development of new models to better measure the brand value in virtual worlds (Barnes and Mattsson, 2011), the identification of challenges for virtual worlds in the experiential value creation (Barnes et al., 2015), the brand value differences among 2D, 3D and real environments (Muzellec et al., 2012; Nah et al., 2011) and a first practical implication of brand value on virtual worlds related to place branding (Pamment, 2011).*

Research limitations. *This study represents one of the first attempt to provide an overview of the brand in the context of metaverse. Evaluating the novelty of the topic, it is clear as further and deep analysis are necessary to give a more complete and updated vision of this phenomena. In the practice, the most important brands are present in the metaverse but this presence still needs to be structured. The limited number of selected papers for the structured literature review provided is a concrete signal of this new line of research which will certainly grow in the coming years. The next steps could be represented by the evaluation of the further scientific contributions that will certainly be made, as well as a broader exploration of the research areas identified so far.*

Managerial implications. *From a theoretical perspective, this study suggests that future research should focus on examining two main aspects. On one hand, the consumer behaviour perspective such as attitudes, perceptions and experiences occurring on the metaverse may be considered. On the other hand, some specific fields of analysis such as tourism, education, place branding, advertising, and gaming in a metaverse context should be a future research focus. This orientation may offer opportunities to better define dynamics and differences in several environments (i.e., real, 2D, 3D). Moreover, this study offers practical implications mainly related to the use metaverse as a space to perform brand positioning strategic choices. Specifically, the metaverse can build strategies for both brand extensions and consumer journey expansion toward a new touching point, moving from a digital to a virtual world.*

Originality of the paper. *This study seeks to provide a comprehensive review of the articles dealing with brands and consumers from a 'metaverse marketing' new perspective. Despite its relevance and increasing interest, research in this area still needs to be expanded beyond a few fields of study. Therefore, future research should focus more on these unexplored topics theoretically and empirically.*

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Delving into sustainability and Made in Italy fashion brands: Perspectives from Generation Z¹

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Abstract

This study is situated within the literature on sustainable fashion and the Made in Italy fashion strand, with the aim to explore consumers' associations with sustainable Made in Italy fashion brands. Through three focus groups with 23 Generation Z consumers and subsequent thematic content analysis, the associations in the overlap area between sustainable fashion brands and Made in Italy fashion brands were explored. Findings showed that consumers associate the sustainable choices of Italian companies mainly with the social dimension of sustainability. Concerning the environmental dimension, Made in Italy products' aesthetics and their qualitative excellence are perceived as almost incompatible with some sustainable practices.

The study contributes to the literature on sustainable branding by focusing on the Made in Italy context for the first time. It enriches the literature on Made in Italy fashion and its sustainability transition, deepening a previously neglected standpoint, i.e., the consumer perspective. Lastly, the findings provide valuable insights to managers of Italian fashion companies engaged in sustainable transition.

Keywords: *Made in Italy; sustainability; fashion industry; focus group; Generation Z (Gen Z); thematic content analysis.*

Framing of the research. *Sustainable fashion is grounded in a philosophical framework that emphasizes sustainability principles within the fashion sector. Specifically, it aims to mitigate environmental and social impacts across the entire lifecycle of textile and apparel products, encompassing aspects such as supply chain, production, distribution, and consumption (Henninger et al., 2016). The sustainable transition of fashion brands holds significant relevance, as the fashion industry represents the most environmentally polluting industry worldwide, accounting for 8 to 10% of total greenhouse gas emissions (Gennari, 2023). Additionally, nearly 97% of fashion items originate from countries like Bangladesh and China, where workers often experience ongoing human rights violations (Montero, 2024). Based on this data, it becomes evident that fashion brands are responsible for the environment, workers, and society. Consequently, they are compelled to actively participate in sustainable initiatives to transition away from “fast fashion” practices.*

However, although pioneers such as Patagonia have led the way in adopting sustainability as a guiding principle of their business, numerous brands continue to prioritize profit maximization while minimizing costs, therefore resulting in an opaque and transient supply chain (Milano Ferri, 2024). In this regard, it is crucial for marketers to realize that adopting sustainable practices offers fashion brands the potential for long-term benefits. This entails enhancing operational efficiency and resource management, leading to extended-range cost reductions, while also increasing consumers' perceptions of the brand (Grubor & Milovanov, 2016). Indeed, 63% of consumers consider the fashion brand's promotion of sustainability to be relevant in their brand choice (Kolk, 2023). Moreover, research on branding and sustainability has shown that sustainable brand initiatives can positively influence consumer-brand evaluations. For instance, it can enhance the brand image by moving toward a more sustainable direction (Araújo et al., 2023; Parguel

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et al., 2015; Chen, 2010), increase perceived brand value (Gupta et al., 2013), and shape perceived brand personality (Sander et al., 2021).

Considering the *Made in Italy* fashion context, world-renowned for its quality and style (Ceccotti et al., 2024), there is a noticeable push toward greater sustainability, thus infusing an ethical dimension alongside the intrinsic aesthetic appeal of Italian products (Fabiatti, 2015). As early as 2012, the National Chamber of Italian Fashion promoted the Decalogue on Social and Environmental Responsibility in the Fashion Industry, to steer fashion in a responsible and sustainable direction (Mortara & Fragapane, 2016). Concurrently, several iconic *Made in Italy* fashion brands have incorporated sustainability into their activities. For example, Giorgio Armani has been involved in humanitarian projects since 2006 (e.g., *Product Red*, *Acqua for Life*) and, with the launch of the Armani Values website in 2022, constantly communicates its social and environmental commitments to consumers (Armani Values, 2024). Considering the historical impact of *Made in Italy* on both domestic and international fashion markets (Terenzi & Benelli, 2021), exploring consumer perceptions of Italian fashion brands transitioning toward sustainability sends a positive signal also to international fashion companies. In this regard, although data suggests that three out of four Italian consumers born between the 1990s and 2010s prioritize a brand's sustainable practices in their choices (Valleriani, 2022), the emerging literature on sustainable *Made in Italy* fashion brands fails to address consumer perceptions of their sustainable transition. For instance, Tebaldi and colleagues (2022) investigated, from a managerial standpoint, the factors that drive companies to adopt eco-friendly practices, along with the levels of implementation and performance of these initiatives. Similarly, other studies have examined case studies of Italian companies to identify sustainable best practices within the supply chain of the Italian fashion system (Terenzi & Benelli, 2021), as well as how the Italian fashion value chain has responded to the COVID-19 crisis through digitalization (Di Maria et al., 2023). Only the case study by Ceccotti and colleagues (2024) provided the first integrated view of the values of *Made in Italy* with sustainability (economic, environmental, and social), by analyzing an iconic Italian fashion company that has embarked on a sustainable path. However, the current research has not yet explored consumers' perceptions of *Made in Italy* brands that are implementing sustainable social and environmental activities.

Purpose of the paper. Exploring the consumers' associations with sustainable *Made in Italy* fashion brands holds significant importance within the outlined context. Firstly, it elucidates the evaluative consumer's responses achievable from *Made in Italy* brands that embrace sustainability. Additionally, it can provide valuable guidance to Italian fashion companies in formulating brand positioning and communication strategies. Moreover, given the potential impact of *Made in Italy* fashion on international market dynamics (Terenzi & Benelli, 2021), this research can motivate other international brands to adopt sustainable practices to enhance consumer perceptions.

Therefore, by merging the literature on sustainable fashion branding and the strand of *Made in Italy* fashion, this study aims to explore the associations that consumers attribute to sustainable *Made in Italy* fashion brands.

Methodology. Given the exploratory nature of our research objective, we employed a qualitative methodology centered on focus group discussions involving individuals from Generation Z. This approach, widely utilized in marketing research, serves to uncover insights into consumer behavior and illuminate areas of inquiry that have received relatively little attention (Jenkins & Harrison, 1990; Fernqvist et al., 2015). Furthermore, focus groups provide valuable insights into respondents' cognitive, emotional, and behavioral responses, which are often difficult to capture through methods like questionnaires or observations (Gibbs, 1997). Moreover, Krueger and Casey (2009) highlighted that in a focus group, participants engage in a dynamic social environment where they interact and exchange ideas. Unlike individual interviews, focus groups allow for the organic emergence of insights as participants actively shape and contribute to the discussion. Indeed, the interactive nature and social context of focus groups encourage the emergence of diverse perspectives (Gibbs, 1997), with participants often prompting one another to consider new issues (Lawless & Heymann, 2010), shedding light on shared perceptions, attitudes, and behaviors (Morgan, 2002). Leveraging interactions among participants, focus groups enable data triangulation and validation, as converging experiences and perspectives bolster the credibility and reliability of research outcomes (Stewart et al., 2007).

We have chosen to concentrate on Gen Z consumers due to their well-recognized enthusiasm for fashion and their notable impact on the industry (Cassidy, 2019). In their decision-making process, they are drawn to brands that align with their core values, particularly those emphasizing sustainability (Cassidy, 2019). Indeed, this generation is frequently acknowledged as one of the most environmentally and socially conscious, exhibiting a strong preference for fashion brands that prioritize environmentally friendly production, ethical labor practices, and transparency in the supply chain (PwC, 2020). Moreover, Generation Z is driving the demand for circular fashion models, which include initiatives such as clothing rental services, second-hand marketplaces, and clothing recycling programs (McKinsey & Company, 2021). This inclination also extends to *Made in Italy* fashion brands, renowned for their commitment to craftsmanship and environmental stewardship (McKinsey & Company, 2021).

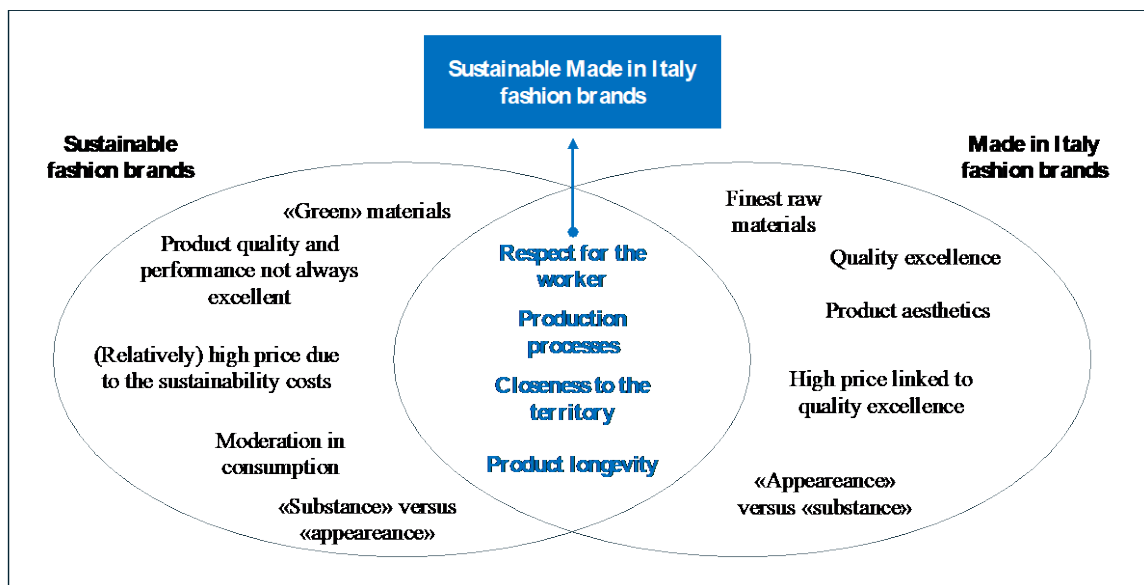
Concerning data collection, participants were initially contacted via email and were invited to participate in the study by completing a self-reported questionnaire. The questionnaire included a screening question to confirm the participants' age, asking, "Are you born between 1996 and 2005?". It also sought to detect the level of importance of *Made in Italy* fashion brands in purchasing choices (e.g., "When you choose a piece of clothing, how important is it to you that it is a *Made in Italy* branded product?") and the sustainable orientation of consumers in the fashion industry. Specifically, sustainability orientation was measured by adapting the 14-item scale developed by Roth & Robbert (2013) to the fashion context (e.g., "It is important to me that fashion companies reduce their emissions"). Adopting a purposive sampling strategy, we recruited Generation Z individuals with high mean values for interest in *Made in Italy* and sustainability orientation. Accordingly, 23 respondents were involved, 17 women and 6 men, aged between 21 and 27, both workers

and students. The three focus groups were conducted in a dedicated room within the Department of Management and took place in November 2023. The discussion guide followed a process of “cyclical development” (Gillham, 2005, p. 22), which reinforced the validity and transparency of the analytical process. The discussion guide's topics first concerned the associations that participants linked to the concept of sustainable fashion brands and then to Made in Italy fashion to identify the overlap area and delineate the perception of sustainable Made in Italy fashion brands. The focus groups, each lasting approximately two hours, were recorded and analyzed through thematic content analysis (King & Horrocks, 2010). To verify the reliability of the analysis, the coding process was performed separately by two members of the research team and subsequently compared. Furthermore, the results were confirmed by two independent expert coders, revealing a satisfactory “ratio of agreement” (i.e., 88%).

Results. The analysis of the three focus groups showed only partial convergence between the participants' associations with sustainability in the fashion industry and the specific characteristics of Made in Italy fashion brands (Figure 1). To obtain a deeper understanding of this overlap area, we will describe the following:

1. The unique associations that are commonly linked to sustainable fashion brands,
2. The unique associations that are commonly linked to Made in Italy fashion brands,
3. The shared associations between sustainable fashion and Made in Italy fashion brands, as perceived by Gen Z consumers who participated in the three focus groups.

Figure 1- Sustainability and Made in Italy fashion brands: The overlap area



1. Sustainable fashion brands

Concerning the unique associations with sustainable fashion brands, the following themes emerged:

- (a) Use of "green" materials such as organic fibers, natural colors, and recycled materials, not from animal exploitation (such as leather, fur and feathers), leading to products that do not harm the environment and society;
- (b) Product quality and performance not always excellent: The choice of sustainable raw materials (e.g., fibers made from food or recycled plastic and eco-leather) can lead to products that sometimes are not aesthetically beautiful and high-performing (e.g., in terms of comfort in use, durability, or softness of fabrics): "Environmental sustainability in clothes makes me think of faded colors, dark brown recycled cardboard labels, and the narrowness of the assortment" (Participant 4, Group 2). Another participant echoed this, saying: "Real leather bags give a whole different feeling than eco-leather bags that are more rigid instead" (Participant 5, Group 2);
- (c) (Relatively) high price to cover the higher costs related to the choice of raw materials and packaging and, above all, to respect workers' conditions. In participants' perception, the price is not necessarily high in absolute terms, but in comparison with that of fast fashion products;
- (d) Moderation in consumption. From the participants' point of view, this theme holds two different meanings. The first is reducing the purchase of large quantities at low prices in favor of more reasoned purchases of sustainable products: "We have been used to buying and wearing clothing almost in disposable mode. This routine is no longer possible; we cannot continue to compulsively buy clothes, even if they are cheap, to use them once, and that is it" (Participant 5, Group 2). On the other hand, one aspect that is emerging as relevant in the participants' perceptions is the extension of product life and recycling of products (i.e., second hand): "We need to take advantage of the garments we have until the end of their useful life, without getting overwhelmed by the logic of the continuous search for low-priced varieties. If they no longer serve us, they can serve others, so why not sell them to keep them alive?" (Participant 6, Group 2);

(e) "Substance" versus "appearance": in the case of sustainable fashion brands, consumers prioritize the impact their clothing choices have on the environment and society over product aesthetics. As a result, they are willing to compromise on product quality, pay higher prices, and even buy fewer garments, rather than continuing to support the fast fashion industry's constant search for new styles.

2. Made in Italy fashion brands

From the analysis of the participants' associations with the Made in Italy fashion brands, the following themes emerged:

- (a) Sophisticated and finest raw materials used to make excellent and durable products;
- (b) Quality excellence: Thanks to the use of fine materials and, as will be discussed, production processes that are still partially artisanal, Made in Italy fashion is "a guarantee of superior quality throughout the world, quality not only in raw materials but also in processes that take great care of all details, such as stitching, packaging, etc." (Participant 6, Group 2);
- (c) Product aesthetics, related to the style, design, and attention to detail (i.e., quality of stitching) of fashion garments offered by Italian companies. "Made in Italy is recognized as beautiful and well made all over the world" (Participant 3, Group 1);
- (d) High price, associated with the high quality of products, style, design, and the awareness of many Made in Italy brands, and only to a lesser extent with the higher costs of sustainability (especially on the social front, connected with respect for workers' conditions);
- (e) "Appearance" versus "substance": the consumer choice is driven by style and the high awareness of Made in Italy fashion brands recognized worldwide. In participants' perceptions, choices driven by product aesthetics (i.e. by "appearance") are almost in opposition to those driven by sustainability (i.e., by "substance"): "Beauty is sometimes associated with superficiality because everyone can appreciate it without too much effort. Sustainability is a different matter. To appreciate it, you must have the will to inform yourself and seek the best solution for you, the environment, and society" (Participant 7, Group 3).

3. Sustainable Made in Italy fashion brands

Several respondents had some difficulties combining the values of sustainability with those of Made in Italy fashion. Indeed, many participants said that the superiority of Made in Italy productions today is still not wholly linked to sustainability: "I think sustainability and Made in Italy in fashion are still disconnected concepts; I have a struggle to put them together" (Participant 5, Group 1). Another participant echoed this consideration: "Made in Italy is still not fully focused on sustainability. Maybe in a few years it will be, but not now" (Participant 1, Group 1). Also, "Not all quality brands, such as Made in Italy fashion brands, are necessarily sustainable, just as it is not that all brands that claim to be sustainable are qualitatively superior to others" (Participant 4, Group 1).

More specifically, the use of "green" raw materials is considered by some participants to be almost not compatible with the high-quality standards and aesthetics of Made in Italy fashion products: "If I buy a Made in Italy fashion product, it is because I am looking for something beautiful, that is of high quality. I believe these characteristics are not found in sustainable products that use eco-friendly materials. Consumers buy the latter for other reasons, not because they are beautiful and high quality" (Participant 6, Group 2). Another participant shared the same opinion: "Certainly, products made from 'green' organic fibers do not stand out in terms of beauty, while Italian fashion products are precisely recognized worldwide for taking care of aesthetic aspects. Are we sure that aesthetics and sustainability are compatible? In my opinion, not at the moment" (Participant 5, Group 2).

More often, in the perception of many participants, there is a spontaneous association between Made in Italy and the social dimension of sustainability. Indeed, delving into the area of intersection between sustainable fashion brands and Made in Italy fashion brands, the following common themes emerged:

- (a) Respect for the worker: in contrast to the dynamics of fast fashion, focus group participants emphasized that one of the defining aspects of sustainable Made in Italy fashion brands is the attention to the quality of workers' conditions and working environments: "I associate Made in Italy with the guarantee that workers cannot be exploited. I take it for granted" (Participant 3, Group 3). In the participants' perception, this is true for companies that still adopt artisanal processes (such as small and medium-sized ones) and for larger companies that nonetheless stand out in the global fashion industry for their attention to the well-being of their human resources;
- (b) Production processes, that are characterized by increasing attention to waste reduction in resource use and care in product disposal, as well as attention to detail at every stage of the materials' transformation;
- (c) Closeness to the territory and the communities they belong to from which they often draw skilled workforce: "The territory becomes part of the company's storytelling. For example, Brunello Cucinelli and Tod's come to my mind: they are firms strongly rooted in a specific area to which they want to give something of what they have built back" (Participant 2, Group 2);
- (d) Product longevity, which is linked to the high quality and artisanal nature of production: in this sense, Made in Italy fashion products are "naturally" associated with sustainability, as they are expected to last longer than those characterized by a lower level of quality. Participants also link the longer life of products to the possibility or willingness to repair them.

Research limitations. *This study has some limits that suggest avenues for further research. Limitations primarily relate to the nature of qualitative research and the focus group method. While generating deeper insight into phenomena, the findings are restricted to small numbers of Generation Z individuals, providing findings that cannot be generalized across populations. Consequently, further research should be done to involve other generational groups, like Gen-Y, Gen-X, and/or Baby Boomers, as well as verify our results by applying quantitative approaches (e.g., surveys or experimental studies). This study also focused on fashion brands. Future research should verify whether our results are generalizable to different Made in Italy sectors investing in sustainability, such as furniture and automotive. Moreover, given that many Made in Italy fashion brands are at the beginning of their sustainable transition and are investing in building a sustainability-based positioning, it might be helpful to replicate the study over time to observe the effects of these investments on consumer perceptions in the medium term.*

Managerial implications. *The results of our study could provide valuable insights to managers of Italian fashion companies engaged in sustainable transition. First, Made in Italy fashion companies should continue strengthening their positioning based on the social sustainability dimension, communicating their closeness to the territory and attention to workers' well-being. Given that many of the processes in Made in Italy fashion are still artisanal, company employees could also be central in the storytelling of the qualitative excellence of Italian products, which are carefully crafted down to the smallest detail, from the choice of raw materials to the different phases of the production process.*

Second, the perceived distance found by the participants between environmental sustainability in the choice of raw materials and the aesthetics and quality of the products leads to a relevant challenge: indeed, firms should work to combine beauty and style with "green" raw materials and ecological production processes without betraying the promise of quality excellence guaranteed by Made in Italy productions. This result could initially be achieved through investments in packaging, an integral part of the product system, as many Made in Italy companies already do on labels and packaging, and then try to intervene more directly on the product itself. In addition to using green materials, companies could focus investment on adopting production processes that can reduce the impact of fashion on the environment while enabling them to maintain the high quality of the products.

Finally, another important activity to consider could be consumer education for moderation through communication campaigns that can lead consumers to reflect on the value of Made in Italy fashion products and the opportunity to extend their useful life or give them a second life. Consumer education through communication, especially toward younger generations such as the one involved in our study, could also help lead to more conscious choices in the purchase of clothing, not only related to the aesthetic value of the product (i.e., the "appearance") but also to the contribution that product can make to reducing the environmental and social harms of fashion (i.e., the "substance").

Originality of the paper. *Our exploratory study stands at the intersection of research on sustainable fashion branding and studies on Made in Italy fashion, contributing to both fields through an investigation of the associations that consumers attribute to sustainable Made in Italy fashion brands. Specifically, our findings reveal first the values that consumers associate with sustainable brands, such as the use of green raw materials and premium prices directly supported by previous literature on sustainable fashion branding that investigates consumers' underlying values and motivations for sustainable fashion consumption (e.g., long-lasting, natural materials, recycled, environmentally friendly production techniques) (Lundblad & Davies, 2016). Second, consumers' associations with Made in Italy fashion, such as the qualitative excellence, aesthetics and high price, emerge from our study, in line with prior studies identifying attributes such as creativity, aesthetics, quality, and sophistication (Temperini et al., 2016). Focusing on the primary objective of our study, the results unexpectedly highlight a challenge in identifying perceptions related to both Made in Italy and sustainable fashion brands. While unambiguous associations with sustainable Made in Italy fashion emerge, such as respect for workers and connections to the territory and community supported by previous studies from a managerial perspective that identify social responsibility as an integrated value between sustainability and Made in Italy fashion (Ceccotti et al., 2024), significant contrasts also arise. Particularly, differences are evident regarding product aesthetics, a trait that, although naturally linked with Made in Italy fashion, does not extend to sustainable fashion brands in the consumer's perception. This finding aligns with broader discussions in the literature, which identify product aesthetics as a significant factor contributing to the attitude-behavior gap in eco-fashion (Niinimäki, 2010). Another relevant difference is related to the concept of quality. Indeed, qualitative excellence that characterizes Made in Italy fashion cannot automatically be linked to sustainable practices, just as adopting a sustainable approach does not necessarily lead to obtaining qualitatively superior products. On the contrary, our study highlights that consumers perceive high quality as not fully and consistently compatible with environmental sustainability when using "green" raw materials. This result aligns with previous studies in the wider fashion industry that measured consumer disgust with garments made with recycled plastic, perceived as contaminated (Meng & Leary, 2021).*

Therefore, our work first contributes to the field of sustainable branding by focusing for the first time on the associations that consumers attribute to a sustainable brand in the specific context of Made in Italy, which has not been studied so far and which could play a central role in the sustainable transition of national and international fashion brands. At the same time, this study enriches the literature on Made in Italy fashion and its transition to sustainability with the consumer perspective, a previously neglected standpoint compared to the managerial one (Ceccotti et al., 2024; Di Maria et al., 2023; Tebaldi et al., 2022; Terenzi & Benelli, 2021).

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Drinking with eyes: how colors elicit consumers' taste expectations of coffee

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Abstract

Research on sensory marketing reveals that the interactions between sight and the other senses is particularly powerful. Specifically, this paper is focused on the role of colors and their impact in affecting consumers' taste expectations towards coffee. The researchers, by considering some previous studies, have presented 4 visual stimuli (white cup, orange-reddish cup, cream colored cup and red cup) and 5 different flavors (aroma intensity, creaminess, degree of caffeine, sweetness, degree of temperature), in a lab experiment involving 300 participants. By applying an inferential analysis, conducted through the one-way between subjects ANOVA, we found that red is the most indicated to arouse pre-conceptions of the aroma intensity, caffeine-content and temperature. Implications and limits are further discussed.

Key words: sensory marketing; consumers; coffee; colors; taste; vendor machine

Framing of the research. Scientific literature shows how research on the relationships between the senses and marketing is growing (Auvray and Spence, 2008), specifically, colors are relevant for food choice (Clydesdale, 1993), as well as beverages (Zellner and Durlach, 2003) and represent a relevant element which affect consumers' taste expectations (Spence, 2024). This is evident in some studies. Carvalho and Spence (2019), verified the role of cup color on perceived coffee taste, finding that pink (versus white) generated a sweeter perception and less acidity. Interestingly, Reinoso-Carvalho et al. (2017) demonstrated that beverages with different colors but same taste may stimulate different expectations, in particular their study was focused on beers. According to Koch and Koch (2003) colors create pre-concepts on taste. Specifically, they investigated the role of colors (red, green, blue, yellow, orange, brown, purple, grey, white and black) on soft drinks. In terms of results, red and orange were associated with sweet taste, white with salty taste, yellow and green with sour taste. Likewise, a connection emerged between yellow and orange to citrus taste, brown to syrup taste and red, orange, yellow to the fruity taste. no color was positively associated with the fizzy "taste". On the contrary, in terms of negative associations, there were the following results:

- the colors green, brown, gray and black were not associated with sweet taste;
- blue, red, white and black were not associated with sourness;
- red, blue, gray and white were not connected to bitterness;
- nine out of ten colors were not perceived as salty (except white);
- red and brown were not connected to citrus taste;
- grey, white and black were not linked to syrup taste;
- grey, white and black were not perceived as fruity;
- brown, red, black and gray were not linked to the fizzy taste of alcohol-free drinks.

As highlighted by Guéguen and Jacob (2014), the color of the container could influence the evaluation of drink. They carried on the following experiment: each participant was invited to enter a room and, on a table, they could find four identical cups, different exclusively for their color (blue, green, yellow and red). Furthermore, the room was subjected to constant temperature control, which had to remain at 23° C. In each cup the drink served - Colombian coffee - had to have a temperature of 40° C and between the various cups the portions of coffee had to be identical. The researchers found that the red cup was considered the one with the hottest drink, followed by yellow green and, finally, blue. The aforementioned results provided strong experimental support for the hypothesis that the color of the container can influence the perception of the temperature of a drink. They also proposed to increase the perceived heat of drinks by

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using red cups, also considering the fact that this mechanism could reduce energy consumption and, therefore, the quantity of electricity consumed by bar managers and restaurants, consequently reducing some costs.

Another interesting experiment was organized by Risso et al. (2015). The experimental study indicated therein demonstrated that the color of a plastic glass can influence both the perception and the expectation of mineral water taste. The experiment was divided into different tests, each having a different focus but, in any case, constantly linked to the color of the container. The first was used to evaluate the aspects of pleasantness, freshness and lightness of the three types of mineral water considered, all through the use of specific visual analogue scales. For the aforementioned first test, the types of water used were: natural, lightly carbonated and carbonated. In addition, plastic cups with three different colors were used: white, red and blue. Through the experiment number two, expectations were analysed, taking into account only the color of the container, without the possibility to taste the liquid. With regards to the experiment number one it emerged that the sample perceived water as more carbonated if contained in a red or blue plastic glass, unlike what happened if it was contained in a white glass. Instead, with the second test it was demonstrated that the participants expected the sparkling water contained in a blue glass to be less carbonated than the same water contained in a red or white glass. Likewise, participants expected the water in a white glass to be cooler than that served in a red plastic glass.

Piqueras-Fiszman and Spence (2012) studied the impact of colors on the consumption of hot chocolate. Each individual involved had to drink four hot chocolates, which were contained in four glasses (different colors-same dimensions). The colors used were cream, in a dark variant, reddish-orange, white and red (colors were chosen because they are the most commonly used both in vending machines and on sale in shops). Results revealed that color of the glasses had a significant impact on the liking of hot drinks. Specifically, the intensity of the flavor of the drink was rated higher when the latter was served in a reddish-orange cup. However, cream-colored glasses were preferred for the aroma of chocolate and supported the perception of sweetness. Moreover, cream-color did not appear to be connected to bitterness.

Another study which inspired our experimental design is the one by Van Doorn et al. (2014), whose analysis was focused on coffee with milk. In particular, three cups were used, in three versions (transparent, white and blue) and different in materials. The experimentation was divided into two distinct, but still connected, tests. The first experimental test involved eighteen volunteers aged between 18 and 62: they had to consume 200 ml of milky coffee. Then, the participants were divided into three groups of six members each: the first group was given the white porcelain cup; the second was given the transparent glass cup; the last group was given the blue porcelain cup. Due to the small size of the sample considered for the first experiment, in order to avoid possible errors, it was decided to proceed with a second test. In experimental test number two it emerged that the type of cup used exerted a significant influence on the participants' evaluation of the perceived sweetness of the coffee and milk. This test involved thirty-six volunteers aged between 17 and 66 and they also had to drink 200 ml of milky coffee obtained by combining 135 ml of whole milk and 65 ml of coffee. Twelve people were given a glass cup with a white rubber band; twelve other people were given a glass cup with a blue rubber band; the last twelve adherents were given a clear glass cup.

The second test demonstrated that the milky coffee was perceived significantly as less sweet when served in the white cup. So, both experiments demonstrate that the color of a container can influence people's evaluations of the taste of a hot drink. In addition, in both studies, the statistically significant results concerned the use of the white cup. In this regard, as a possible reason, the possible effect given by the chromatic contrast between the color of the cup and that of the coffee was taken into account: indeed, the white cup could have influenced the perception of the brown of the milky coffee. As a consequence, it is possible to state that the color of the cups could influence the multisensory experience in force during the moment of consumption of hot drinks.

Finally, a relevant research was carried on by Maga (1974) whose study was aimed at understanding the possible interaction between colors and the four basic tastes through an experiment conducted with colored water. For the experimental test, the colors considered were red, green, yellow and colorless and the tastes were salty, sour, bitter and sweet. The "aqueous solutions" used for the research were made with agents such as sodium chloride, sucrose, citric acid and caffeine and the quantity of chemical substance was diluted with demineralized water which, depending on what was required by the different steps of the experiment, could be colorless or colored red, green or yellow by adding tasteless dyes. As a consequence of this study, Maga (1974) clearly demonstrated that color could influence the ability to distinguish the four basic tastes and, also, identify the psychological role in the association between foods and colors. Furthermore, Maga noted that the sample considered did not associate the yellow color with the sweet taste; green color led to an increased sensitivity to sweetness, while the red color did not influence it. On the other hand, both yellow and green decreased sensitivity with regards to sourness.

Purpose of the paper. Inspired by some studies, this research is aimed at shedding light to the role of colors for Italian consumers, with particular reference to coffee, whose consumption is a custom in Italy. For this reason, the researchers want to explore how colors can impact on taste expectations, with implications for those small firms that sell coffee (bars and cafeterias).

Methodology. This is a lab experiment involving 300 participants (199 females, 101 males). The visual stimuli was represented by images depicting a vending machine with a cup of coffee in the foreground.

The images used during the experiment were originated from an original image, appropriately modified for experimental purposes using computer graphics software. In order to have different versions, both the color and the container itself represented in the images were manipulated in the various experimental groups. This was the original visual stimulus:

Fig.1: The original stimulus



Source: <https://www.canteen.com>.

Continuing with the explanation of the use of the original real image, through Photoshop CS6, we proceeded to create four images “gemmed” from the real image. Each “gemmed” image differed from the original only in terms of the glass color; in terms of position, in each version the glass is in the foreground.

In particular, our visual stimuli (the glass) were 1) white, 2) orange-reddish color, 3) cream color and, finally, 4) red. These colors were selected on the basis of the experiment carried on by Piqueras-Fizman and Spence (2012). The participants were randomly assigned to one of the following 4 groups:

- Group n. 1 = people exposed to the image with the white cup;
- Group n.2 = people exposed to the image with the orange-reddish cup;
- Group n. 3 = people exposed to the image with the cream-colored cup;
- Group n. 4 = people exposed to the image with the red cup.

Then, every participant had to fill a short questionnaire. Each participant was asked to answer questions about:

- degree of aroma intensity attributed to the coffee (Q1);
- degree of creaminess attributed to the coffee (Q2);
- degree of sweetness attributed to the coffee (Q3);
- degree of caffeine attributed to the coffee (Q4);
- degree of temperature attributed to the coffee (Q5).

Every question was organized as a Likert-scale one, with scores from 1 to 7.

On the basis of previous studies, our hypothesis are:

Hp.1: The cream-colored disposable cup is the one that “conveys” the preconception of intensity of aroma of the coffee dispensed better than the others.

Hp.2: The color of the disposable cup has no bearing on the preconception of creaminess of the coffee dispensed.

Hp.3: The disposable cream-colored cup is the one that “conveys” the preconception of sweetness of the coffee dispensed better than the others.

Hp.4: The white disposable cup is the one that “conveys” the preconception of a high caffeine content in the coffee dispensed better than the others.

Hp.5: The red disposable cup is the one that “conveys” the preconception of the high temperature of the coffee dispensed better than the others.

In our experiment, the manipulated independent variable is represented by the color of the coffee cup illustrated on the image the participants were exposed to; the dependent variables, in addition, are represented by the ratings expressed on the Likert-scale by the participants.

It is fundamental to underline that the evaluations given by the participants were expressed in the same context and in the same conditions, except for the color of the cup of coffee in the foreground.

The evaluations expressed by the participants, then, were merged into a database and were subjected to a One-way between subjects ANOVA, considering the color of the disposable coffee cup as the between-subjects factor.

In the presence of a significant ANOVA we were led to think that at least one of the means referring to the experimental groups was significantly different from the others and it was necessary to proceed with post-hoc tests.

In particular, to identify which treatment modality (which color of the coffee cup) the significantly different medians referred to, we proceeded by comparing them two by two (pairwise comparison) by applying the Bonferroni method.

We used the software SPSS, v.17.0.

Fig.2: The colored cups



Source: Our elaboration with Photoshop

Result. First of all we have collected data about the average values of the evaluations expressed by the participants, which shows some differences

Table 1: Average values

Colors/Questions	Q1	Q2	Q3	Q4	Q5
White	4,27	4,28	3,87	4,25	5,04
Orange-reddish	4,47	4,08	3,79	4,12	4,69
Cream	3,84	4,10	3,92	3,90	4,32
Red	4,97	4,40	3,80	5,08	5,48

For each of the questions from Q1 to Q5, these are the results of the inferential analysis conducted through the one-way between subjects ANOVA:

- with reference to question Q1: we calculated a value of the statistic $F(3, 296)=6.084$; $p<0.01$; this test was therefore highly significant and the post hoc tests revealed, in pairwise comparisons, statistically significant differences between some levels of the treatment (the color of the disposable cup) about the ability to arouse the idea of aroma intensity in observers; in particular, the red color proved to be the best performing from the point of view of its ability to arouse pre-conceptions of the aroma intensity of the coffee dispensed;
- with regards to Q2, we calculated a value of the statistic $F(3, 296)=0.570$; this test was therefore not significant. We did not detect differences in the ability of the colors to “convey” the preconception of creaminess of the coffee dispensed;
- regarding question Q3: we calculated a value of the statistic $F(3, 296)=0.96$; this test was also not significant. Essentially, we found no differences in the ability of the colors to “convey” the preconception of the sweetness of the coffee dispensed;
- question Q4: we calculated a value of the statistic $F(3, 296)=7.527$; $p<0.01$; this test was therefore highly significant and the post hoc tests revealed, in pairwise comparisons, statistically significant differences between some levels of the treatment (the color of the disposable cup) in the ability to arouse the preconception of a high presence of caffeine in observers; in particular, the color red is the most associated one with the idea of caffeine. However, we did not find any differences between the remaining colors;
- finally, referring to question Q5: we found a value of the statistic $F(3, 296)=6.361$; $p<0.01$; this test was therefore highly significant and the post hoc tests revealed, in pairwise comparisons, statistically significant differences between some levels of the treatment (the color of the disposable cup used to serve the coffee) in the ability to “convey” the temperature preconception of the drink served at the observatories. In particular, the color red proved, from this point of view, to be the best performing among the colors compared.

For 3 questions out of 5 these differences were also statistically significant at the usual levels of first type error.

In particular:

1. with reference to the preconception of aroma intensity (see question Q1), the color of the best performing disposable cup was red; this result does not support Hp.1 (formulated on the basis of Piqueras-Fiszman and Spence, 2012).
2. regarding the preconception of creaminess (Q2), none of the colors compared seem to show an ability to “convey” this variable better than the others; this result is consistent with Hp.2 (formulated on the basis of Piqueras-Fiszman and Spence, 2012).
3. with reference to question Q3 (relating to the preconception of the sweetness of the coffee dispensed), equally, none of the colors compared seem to show an ability to “convey” this characteristic better than the others; this result does not support Hp.3 (formulated on the basis of Piqueras-Fiszman and Spence, 2012).
4. regarding question Q4 (referring to the preconception of caffeine contained in the coffee dispensed) the best performing color was red; this result does not support Hp.4 (formulated on the basis of the study by Van Doorn, Wullemijn and Spence, 2014).

5. finally, regarding question Q5 (referring to the preconception of temperature of the drink dispensed), the best performing color was, once again, red; Incidentally, this result is in line with Hp 5, which was formulated starting from the study by Guéguen and Jacob (2014).

Research limitations. The results just summarized were obtained during a laboratory study, in a “ceteris paribus” context in which several potential confounding variables were controlled.

These variables are so called because they are able to (potentially) affect the cause-effect relationships between the independent variable (in this case, the color of the cup) and the dependent variable of interest from time to time (we refer to the dimensions referred to questions Q1 to Q5 of our Questionnaire).

Given the experimental nature of our work, the degree of internal validity of our results can be considered high; however, there may be problems with the generalizability of the results of our study. In particular, the external validity of our results could be reduced by the non-representativeness of the sample of participants compared to the Italian population that uses coffee vending machines on a daily basis; other problems could arise from the “non-ecological” context in which the experimental task was carried out.

Managerial implications. We can affirm that the color of the disposable cup used to dispense coffee is capable of arousing preconceptions on the part of observers regarding a series of characteristics that we have examined. The results lead us to think that the color of the disposable cup chosen to dispense the coffee can significantly influence some preconceptions relating to the drink (we are referring, in particular, to dimensions such as the intensity of aroma, the caffeine content and the temperature of the drink).

In light of the above, those who manage automatic coffee vending machines should take into account that certain colors perform better than others, as long as they want to “convey” certain characteristics of the coffee being dispensed. The choice of color of the disposable cup therefore seems to influence preconceptions relating to some characteristics of the drink in question. Preconceptions, on the other hand, are important precursors of perceptions of product characteristics, influencing, albeit in probabilistic (and non-deterministic) terms, the processes of choice and repetition of purchases and consumption by customers.

To conclude, from our study it clearly emerges that the red color is the most appropriate for the disposable cup if you want to emphasize the dimension of the intensity of the coffee aroma and its temperature.

On the other hand, since red is the color most strongly associated with the idea of caffeine, it appears the least suitable when you have to dispense decaffeinated coffee through the vendor machine.

Originality of the paper. The original contribution of this paper is to apply three different studies to an Italian context, which needs more research on this kind of studies. Moreover, given that coffee is a rite in Italy, this is particularly relevant for catering firms.

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Aging and social influence: An empirical investigation of the effect of age on consumers' susceptibility to word of mouth*

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Abstract

The present research investigates the relationship between consumers' age and their susceptibility to word of mouth (WOM), that is, their tendency to rely on WOM in their purchase decision-making. Two empirical studies shed light on this relationship and explore a potential underlying mechanism involving consumers' sense of control. Study 1 (N = 450) shows that consumers at older ages feel a greater lack of control, and this feeling in turn increases their susceptibility to WOM. Study 2 (N = 150) provides further evidence for the central role of sense of control by showing that the aforementioned mediated relationship is stronger among consumers with a higher chronic desire for control, that is, those who are particularly motivated to pursue control over their lives and thus may perceive a significant decline in their sense of control due to aging. Interestingly, both the studies reveal a residual negative relationship between age and susceptibility to WOM, suggesting that the examined relationship may be complex and other mediators might intervene to explain why, in specific circumstances or for certain consumer segments, susceptibility to WOM might decrease, rather than increase, with age. Theoretical, policy, and practical implications are discussed.

Keywords: aging; older consumers; WOM; lack of control; consumer susceptibility; chronic desire for control

Framing of the research. Industrialized countries are witnessing a deep demographic transformation due to population's aging compared to a decline in birth rate (Drolet and Yoon, 2021; Guido, 2018). This demographic shift is leading to significant changes in the proportion of older individuals (i.e., those aged 65 and older; Amatulli et al., 2018; Berg and Liljedal, 2022) compared to other age groups (Laukkanen et al., 2007). For example, it is estimated that by 2050 the percentage of older individuals will make up 29% of the total population (PopulationPyramid.net, 2023). Consequently, this age group may become a relevant segment for companies (Kennett, Moschis, and Bellenger, 1995; Lambert-Pandraud, Laurent, and Lapersonne, 2005), which should thus consider attitudinal and behavioral differences across age groups. In parallel with this demographic transformation, information sources are growing more and more, with consumers being increasingly exposed to a wide range of marketing communications: from traditional advertising to interpersonal communications and user- or AI-generated content (Barreto, 2014; Longoni, Cian, and Kyung 2023). In this context, one aspect that is worth exploring is how aging affects consumers' use of information sources. For example, prior research suggests that, compared to their younger counterparts, older consumers are more conservative in their adoption of new communication channels. In contrast, young consumers are more likely to use the Internet for collecting information about products and services (Lopez and Sicilia, 2011). Furthermore, older consumers seem to prefer detailed messages with extensive information, while younger ones seem to prefer shallow messages that go straight to the point (Guido, 2018; Iyer, Yazdanparast, and Strutton, 2017).

Nonetheless, little is known about older consumers' susceptibility to word of mouth (WOM), namely, the extent to which they are persuaded by information about goods, services, and companies that is typically exchanged among consumers in both online and offline contexts (Westbrook, 1987). WOM is one of the most relevant sources of information in today's markets, with approximately 70% of consumption decisions being influenced by this type of communication

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(Balter, 2008). However, empirical evidence on how consumers differently react to WOM communications as a function of their age is mixed and inconclusive. For instance, Lopez and Sicilia (2011) state that age differences do not affect consumers' susceptibility to WOM, while East, Uncles, and Lomax (2014) support the idea that older consumers are less influenced by WOM due to their social isolation, which reduces their exposure to this form of communication. Instead, Iyer, Yazdanparast, and Strutton (2017) show that, compared to their younger counterparts, older consumers are more susceptible to WOM messages provided in their preferred communication modes, which are face-to-face and telephonic conversations; however, this difference could be partially overcome when WOM messages are communicated by a peer. Despite valuable, these preliminary findings seem inconclusive about the role of age in consumers' susceptibility to WOM. Therefore, the present research tries to fill this gap by exploring the psychological process underlying the relationship between consumers' age and their susceptibility to WOM.

Prior literature on aging and consumer behavior suggests that, as consumers age, they tend to strengthen their beliefs, thus increasingly relying on habits (Lambert-Pandraud, Laurent, and Lapersonne, 2005; see Guido, 2018, for a review), resisting innovations (Laukkanen, 2016), and expressing change aversion (Wallach and Kogan, 1961). As a result of this tendency, consumers at older ages are less inclined to change their mind and preferences, remaining loyal to their favorite brands (Lambert-Pandraud, Laurent, and Lapersonne, 2005). In general, this resistance to change might stem from older consumers' progressive deterioration of information processing capacity, due to a progressive decline in cognitive, physical, and relational abilities (Kennett, Moschis, and Bellenger, 1995). Considering these cognitive and behavioral patterns, it is feasible that older consumers (i.e., 65 years and older), compared to their younger counterparts, are more cautious in revising their beliefs and preferences and, consequently, less susceptible to information about products, brands, or companies that other people provide in the form of WOM (East, Uncles, and Lomax, 2014).

Despite the plausibility of this prediction, one more counterintuitive possibility is that consumers at older ages are more susceptible to WOM. As preliminary evidence for this possibility, research by the University of Cambridge's Dignity Project (Dignity Project, 2020) shows that consumers aged 65 years and older tend to rely more on WOM as a primary source of information. Consistent with this idea, Carrigan, Szmigin, and Wright (2004) found that, despite older consumers' perception of television and press as more reliable information sources, WOM from friends and family predominantly influences their purchasing behavior, especially in health and well-being (Gibler, Lumpkin, and Moschis, 1998). Taken together, these prior findings suggest that older consumers might be more susceptible to WOM. Yet, little is known about the potential mechanism underlying such a possible relationship. The current research hypothesizes that a possible mechanism is a decline in the sense of control, which may contribute to explaining why consumers at older ages may be more susceptible to WOM.

Sense of control is the belief that the events and the outcomes in life are the consequences of one's own actions (Mirowsky and Ross, 1989). This aspect has been described in the extant literature by using various definitions, such as internal locus of control (Rotter 1966), personal efficacy (Downey and Moen, 1987), personal autonomy (Seeman, 1983), and primary control (Heckhausen et al., 2010). Prior studies have documented a negative relationship between age and sense of control, so that individuals tend to lose their sense of control as they age (Heckhausen et al. 2010; Heckhausen and Farruggia, 2003; Lang and Heckhausen, 2001). Indeed, with aging, individuals' health and physical functioning deteriorate; thus, their perceived ability to control their lives and the surrounding environment decreases, generating greater challenges for such individuals and increasing their vulnerability (Heckhausen et al., 2010).

Lack of control typically leads individuals to engage in compensatory strategies to restore their sense of control (Beck et al., 2020; Landau, Kay, and Whitson, 2015; Peluso et al., 2017). For example, consumers experiencing a low sense of control tend to seek structured consumption (e.g., they prefer products with sharp edges) and show a preference for products that require a lot of personal effort (e.g., items for physical activity) to feel more competent in achieving desired results (Cutright, 2012; Cutright and Samper, 2014). Another interesting compensatory strategy implemented by individuals is described as "agentic shift", intended as "delegating" decision-making responsibility about their choices and behaviors to external sources, allowing others to decide for them (Fennis et al., 2012). Indeed, when individuals have a lower sense of control, they experience a higher need for input from others. In such a situation, they not only become more open to taking advice (Tost et al., 2012) but also tend to act according to what other individuals say (Fennis et al., 2012). Based on this reasoning, we hypothesize that consumers at older ages feel a greater lack of control, and this feeling increases their susceptibility to WOM. Thus, lack of control should serve as a mediator in the relationship between age and susceptibility to WOM, explaining why older consumers may become more open to social influence, in general, and to WOM communications, in particular.

Purpose of the paper. In this research, we explore the complex relationship between age and susceptibility to WOM. Based on prior literature on aging, consumer behavior, and sense of control, we hypothesize a two-faced relationship between age and susceptibility to WOM, which includes both a negative path (consumers at older ages are less susceptible to WOM) and a more intriguing, positive path mediated by control (consumers at older ages feel less in control and thus are more susceptible to WOM), which is the main focus of this research. We tested this relationship in two distinct studies. Specifically, Study 1 is designed to test whether consumers at older ages feel a lower sense of control, and this feeling, in turn, is associated with higher susceptibility to WOM. Then, Study 2 digs deeper into this control-based mechanism. Building on the notion that such a mechanism should be magnified among consumers who chronically seek to be in control over their environment (Burger, 1992; Peluso et al., 2017), Study 2 tests the moderating role of consumers' chronic desire for control (Burger, 1992), which is a personality trait that captures the extent to which individuals are generally motivated to control the events that happen in their lives (Burger and Cooper, 1979). Consistent with this

reasoning, Study 2's results show that, as consumers age, those with a higher (vs. lower) chronic desire for control experience a more pronounced perception of lack of control and, consequently, an increased susceptibility to WOM.

Study 1: Methodology. Four hundred fifty consumers ($M_{Age}= 49.27$, $SD_{Age}=20.44$, 227 males) were recruited in a midsized Italian city to participate in a survey study during Fall 2019 and Winter 2020. Data were collected by three trained interviewers blind to the study's goal. Although the interviewers adopted a convenience sampling procedure, allowing respondents to participate in the study on a voluntary basis, the data set adequately covered all ages (age range: 18-96 years). After some filler questions (e.g., "How many times in a week do you go to the supermarket?"), the participants were asked to complete a three-item seven-point Likert scale drawn from Ferguson and Goodwin (2010) to assess respondents' perceived lack of control (e.g., "I often feel that most situations are out of my control"; 1 = strongly disagree, 7 = strongly agree). Subsequently, they were asked to indicate their susceptibility to WOM by answering three items (e.g., "How much do you rely on advice and opinions of others when making purchases?"), which were adapted from Iyer and Mitch (2021) and assessed on a seven-point rating scale (1 = not at all, 7 = very much). Finally, the participants provided data about their gender (0 = male, 1 = female), year of birth, education level (1 = less than high school, 2 = high school diploma, 3 = bachelor's degree, 4 = master's degree or higher), and income level (1 = less than €20,000, 2 = €20,000 - €39,999, 3 = €40,000 - €59,999, 4 = €60,000 - €79,999, 5 = €80,000 - €100,000, 6 = over €100,000).

Study 1: Results. The three items assessing perceived lack of control ($\alpha = 0.80$) and the three items assessing susceptibility to WOM ($\alpha = 0.91$) were combined to constitute two aggregated measures of the respective constructs (lack of control: $M = 3.78$, $SD = 1.46$; susceptibility to WOM: $M = 3.32$, $SD = 1.46$). Then, we estimated a mediation model using the PROCESS SPSS Macro (Model 4) by Hayes (2022), in which susceptibility to WOM served as the dependent variable, lack of control was the mediator, and age was the independent variable. Therefore, we first regressed lack of control on age. The results revealed a significant positive relationship between these two variables ($b = 0.009$, $p = 0.005$), suggesting that older consumers experience a greater lack of control. Then, we regressed susceptibility to WOM on lack of control, controlling for age. The results showed a significant positive relationship between lack of control and susceptibility to WOM ($b = 0.194$, $p < 0.001$), suggesting that consumers who feel less in control rely more on WOM. Interestingly, the analysis also showed a significant negative relationship between age and susceptibility to WOM ($b = -0.020$, $p < 0.001$), which was compatible with the two-faced nature of the relationship between these two constructs. To test the predicted mechanism based on control, we estimated the indirect effect of age on susceptibility to WOM via lack of control, which was positive and significant ($b = 0.002$, 95% confidence interval [CI] = 0.0004, 0.0037). Repeating the analysis by adding gender, education level, and income levels as covariates did not change our substantive results.

Overall, this study's results support the idea that older consumers are more susceptible to WOM, and this age-related effect is driven by a reduced sense of control. This study sheds light on the complex relationship between age and consumer susceptibility to WOM. More specifically, this positive control-mediated path competes with a negative path, whereby consumers at older ages may be less susceptible to WOM, likely due to an overreliance on their beliefs and preferences. In the subsequent study, we dig deeper into the positive path by exploring the moderating role of chronic desire for control in the relationship between age and lack of control. However, we acknowledge that the negative path also deserves further investigation (an exploration of possible mechanisms underlying this negative path is currently in progress).

Study 2: Methodology. This study is designed to provide converging evidence for the central role of sense of control in the relationship between age and susceptibility to WOM, by testing whether the control mechanism is magnified among consumers with a higher chronic desire for control. More specifically, in this study, we used a completely different sample from that employed in Study 1 to show that older consumers perceive a greater lack of control and, consequently, are more susceptible to WOM. However, this perception is stronger among those who chronically desire to be in control over their environment as compared to those with lower levels of this desire. To this end, one hundred fifty consumers ($M_{Age}= 51.35$, $SD_{Age}=22.08$, 67 males) were recruited in a midsized Italian city to participate in a survey study during Spring 2022. Data were collected by a trained interviewer blind to the study's goal, using the same sampling procedure as in Study 1 to cover all ages (age range: 20-90 years). The questionnaire used the same measures as in Study 1, plus a three-item measure of chronic desire for control drawn from Peluso et al. (2017) and assessed on a seven-point Likert scale (e.g., "I enjoy having control over my own destiny", 1 = strongly disagree, 7 = strongly agree).

Study 2: Results. We averaged the scores of the three items assessing chronic desire for control ($\alpha = 0.73$), the three items assessing lack of control ($\alpha = 0.77$), and the three items assessing susceptibility to WOM ($\alpha = 0.93$) to constitute aggregate measures of the respective constructs (chronic desire for control: $M = 5.65$, $SD = 1.20$; lack of control: $M = 3.70$, $SD = 1.36$; susceptibility to WOM: $M = 3.44$, $SD = 1.47$). Then we estimated a moderate mediation model (Model 7 in the PROCESS SPSS Macro; Hayes, 2022), in which susceptibility to WOM was the dependent variable, lack of control served as mediator, age was the independent variable, and chronic desire for control was the moderator of the relationship between the independent variable and the mediator. We first regressed lack of control on age, chronic desire for control (mean-centered), and their interaction. The results revealed a significant positive effect of age ($b = 0.024$, p

< 0.001), confirming what emerged in Study 1, and a significant positive effect of chronic desire for control ($b = 0.209$, $p = 0.014$). More importantly, the analysis revealed an interaction effect of age and desire for control on lack of control ($b = 0.008$, $p = 0.088$). Despite its marginal significance, we decomposed this interaction effect by estimating the effect of age on lack of control at lower ($M - 1SD$) and higher ($M + 1SD$) levels of the moderator. As expected, the effect of age on lack of control was marginally significant for consumers low in chronic desire for control ($b = 0.015$, $p = 0.052$) and significant and stronger for those high in this individual characteristic ($b = 0.033$, $p < 0.001$). Subsequently, we regressed susceptibility to WOM on lack of control by controlling for age. The results revealed a significant positive relationship between lack of control and susceptibility to WOM ($b = 0.358$, $p < 0.001$), and a significant negative relationship between age and susceptibility to WOM ($b = -0.014$, $p = 0.019$). Finally, we estimated the indirect effect of the interaction term (age \times chronic desire for control) on susceptibility to WOM via lack of control, which was significant at a 90% level (index of moderated mediation: $b = 0.003$, 90% CI = 0.0001, 0.006). The indirect effect of age on susceptibility to WOM via lack of control, estimated for those with a lower chronic desire for control ($M - 1SD$; $b = 0.005$, 95% CI = 0.0002, 0.011), and the same effect, estimated for those with a higher desire for control ($M + 1SD$; $b = 0.012$, 95% CI = 0.004, 0.022), were both significant, yet the latter was more than double the former in size. Adding gender, education level, and income levels as covariates in the model did not change our substantive results. Despite the marginal significance of the index of moderated mediation and the related conditional indirect effects, taken together this study's results are compatible with our theorizing and thus provide further support to it.

Research limitations. The present research encompasses three main limitations that provide opportunities for future studies. First, it provides preliminary evidence for the central role of sense of control in the complex relationship between age and susceptibility to WOM, by demonstrating that older consumers feel less in control and, as a result of this feeling, are more influenceable by external information provided by others in the form of WOM. Coherently with our reasoning, the central role of sense of control is magnified among those who put high importance on their own ability to control the environment out of a chronic desire to do so. Importantly, our two studies provide evidence that the relationship between age and susceptibility to WOM is a complex one since it seems to be driven by two competing mechanisms that operate in the opposite direction. Therefore, to shed further light on this relationship, future studies could explore other potential mediators (e.g., social isolation, cognitive rigidity; East, Uncles, and Lomax, 2014) that might elucidate the mechanism underlying the residual negative relationship between age and susceptibility to WOM, which has received relatively little attention in the present research. Secondly, our two studies focused on Italy. Even if this country represents an ideal setting, as the Italian population is aging at an increasing pace due to a rise in life expectancy and a reduced fertility rate (Italian National Institute of Statistics, 2022), future studies could try to generalize our findings to other countries. Thirdly, we acknowledge that surveys allow a partial understanding of consumers' attitudes and behaviors because of the correlational nature of data. Future studies could adopt experimental techniques to establish cause-effect relationships among the variables of interest. Such experimental techniques might be useful to test the effectiveness of potential interventions aimed at making older consumers feel more in control, thus mitigating their susceptibility to WOM and, by extension, to external social influence.

Managerial implications. Our results provide relevant insights for companies and policymakers. For companies, older consumers represent an important marketing segment, due to their higher disposable income compared to young consumers and their substantial presence in the population (Drolet and Yoon, 2021). Therefore, it becomes of interest to advance our understanding of how older consumers behave in the market (Amatulli et al., 2018). Our results revealed that consumers at older ages may be more susceptible to WOM. This suggests that companies may rely on this form of interpersonal communication to inform older consumers about their products and services, in addition to relying on traditional communication tools, such as newspapers and television. However, the psychological mechanism of lack of control that drives older consumers' higher susceptibility to WOM raises important questions related to their potential vulnerability to persuasive attempts in the form of offline and online messages, with implications in terms of their capability of recognizing deception and untruthful information (Guido, 2018). In this respect, this research sheds initial light on potential drawbacks deriving from older consumers' lack of control and susceptibility to external information. Companies and policymakers should consider such drawbacks to develop policies that can help older consumers feel more in control.

Originality of the paper. To the best of our knowledge, the present research represents the first attempt to understand the mechanisms underlying the complex relationship between age and consumers' susceptibility to WOM. Although prior literature suggests a seemingly negligible relationship between these two constructs (e.g., Lopez and Sicilia, 2011), the present research is the first to introduce the idea that susceptibility to WOM may significantly vary with consumers' age. This phenomenon has been previously overlooked because its outward nonsignificant relationship; however, this research indicates that it is instead characterized by two mechanisms that operate in the opposite direction. Consistent with this idea, our findings provide preliminary, yet promising, evidence that this relationship incorporates potentially competing mechanisms that may lead older consumers to be differently susceptible to WOM and social influence in general, depending on individual and contextual factors. On one hand, our findings demonstrate that the positive effect of age on susceptibility to WOM is driven by perceived lack of control, which pushes them to rely more on external information. Thus, we clarify the role of sense of control, by contributing to the literature on aging and social influence. On the other hand, our findings hint at the possibility that, parallel to this positive mechanism, there are other intervening factors that might explain the residual negative relationship between age and susceptibility to WOM, paving the way for further exploration of the relationship between these two variables and contributions to the growing literature on the so-called silver economy (e.g., Colurcio, Vigolo, and Edvardsson, 2022).

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The rise of Phygital Reality: insights from Structural Topic Modelling

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Abstract

Latest technological advancements enabled to go beyond digitalisation, offering opportunities to combine physical and digital realities in a hybrid phygital one, with the potential to disrupt several activities. The aim of this work is to conduct an explorative literature review on the emerging topic of phygital reality. We employed Structural Topic Modelling, a text mining methodology, to analyse data retrieved from Web of Science and Scopus databases. The analysis led to the identification of seven thematic areas that allow to gain a broad understanding of phygital applications in different contexts: (1) Metaverse, (2) Health Technology, cultural heritage and gaming, (3) Fashion & Luxury, (4) Customer experience, (5) Education, (6) Tourism, (7) Retail experience. The study provides some clarity on the exploitation opportunities of phygital reality and identifies a gap concerning the phygital applications to enhance social inclusion toward some disadvantaged and marginalised segments, thus providing insights on business opportunities to fill this gap.

Key words: *phygital, text mining, structural topic modelling, social inclusion*

Framing of the research. *Covid-19 pandemic led consumers worldwide engage in exercise, shopping and socialisation activities from their own homes, thus accelerating an already existing trend. These habits partially survived even after the acute phase of pandemic had passed, encouraging the development of a “phygital reality” (Schneider, 2021).*

The phygital combines two types of realities: the traditional physical one and the digital one (Mele et al., 2023). The term describes the social interactions taking place at the intersection between physical and digital contexts (Mele & Russo-Spena, 2022) based on the combination of physical and digital contents (Gelsomini et al., 2021). Phygital experience originally dealt with retail, but it was subsequently developed in fashion and banking industry (Ballina et al., 2019). Phygital is however an overarching phenomenon that leverages technological breakthroughs in the field of computing, artificial intelligence, augmented reality and virtual reality to transform many of our daily activities, from work and study to travel and entertainment, toward the integration of virtual environments in real life. Research on this topic is still in its infancy and embraces different fields. The aim of this work-in progress study is to review existing literature on phygital applications by applying structural topic modelling (STM) methodology, in order to make some clarity on the main research streams and identify some gaps to be filled by future research. The remaining of the manuscript is organised as follows: a methodology section represents the main steps taken collect data and conduct the STM analysis, a results section presents and discusses the main topics identified, and eventually we highlight the limitations, managerial implications and the originality of our work.

Methodology. *We retrieved all the papers pertaining to the subject of interest by searching for the term “phygital” in the Web of Science and Scopus databases. Both searches were limited to works published only in English, with no specific time frame. There were 324 records retrieved in total. We decided not to restrict the search to a specific publication type because, given the exploratory nature of the study and the novelty of the topic, it was deemed appropriate to be as inclusive as possible at this stage of the research.*

Next, we used KNIME Analytics to carry out the text mining procedures, implementing the standard stages of text pre-processing on the extracted abstracts (Tursi & Silipo, 2018). Initially, we removed the repeated entries, resulting in a final sample size of 196 observations. Next, we eliminated stop words and non-descriptive words based on their low word frequency, and then we used the Kuhlen Stemmer. Ultimately, we constructed the bag of words by taking into account all the individual words and the most occurring bi-grams.

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In order to get the main themes that may effectively summarise the content of the 196 abstracts, we used the Structural Topic Modelling (STM) approach developed by Roberts et al. (2019). STM, like the Latent Dirichlet Allocation (LDA) model introduced by Blei et al. (2003), enables the summarization of a collection of texts into a set of themes. Each topic is described by a list of terms, and each document is assigned a probability of belonging to each subject (Blei et al., 2003). In LDA, it is believed that all documents have the same distribution of themes (topic prevalence). On the other hand, in Structural Topic Modelling (STM), each document is estimated to have a unique distribution of topics, and the model also allows for correlation between topics. When determining the best number of topics, four factors may be taken into account: exclusivity, semantic coherence, held-out likelihood, and residual variance. In our scenario, exclusivity implies that the best answer is achieved by selecting between 6 and 11 topics. Semantic coherence is achieved with fewer than 7 topics. The held-out probability is achieved with between 6 and 11 topics. The residual variance is around 13 topics. Next, we assessed three potential options for subjects: 6, 7, and 8. Ultimately, we chose the second option since it was simpler to read and had less instances of overlapping themes in terms of their real significance.

Results. The table below provides a concise summary of the subjects and keywords that have been identified.

Table 1: Identified topics and keywords

Topic 1	Topic 2	Topic 3	Topic 4	Topic 5	Topic 6	Topic 7
business	data	consumer	brand	development	approach	behavior
concept	design	customer	consumer	digital	art	customer
digital	digital	customer-experience	consumption	education	cultural	dimension
emerg	game	design	experience	educational	digital	experience
future	information	engagement	fashion	generation	experience	play
metaverse	interaction	experience	luxury	learn	innovation	positive
potential	physical	journey	online	proces	museum	retail
technology	robot	market	product	student	social	service
virtual	space	physical-digital	retail	support	tool	store
world	system	strategy	strategy	teacher	tourism	technology

The following subsections provide a discussion of the identified topics.

Topic 1: Metaverse

The convergence of physical and digital realms, commonly known as “phygital”, has received significant scholarly attention in recent literature, particularly regarding its integration with the expanding concept of the metaverse (Omarali, 2023). As a result, new mechanisms of value creation and capture at the intersection of physical and virtual economies emerge in the metaverse (Mancuso et al., 2023). Technological developments are expected to introduce a new organization to physical and virtual socio-spatial relations, as well as new socio-technological groups (Hamurcu, 2022).

The new human dynamics will be a seamless integration of both physical and digital realms, known as phygital (Sui & Shaw, 2022). The pandemic has accelerated the shift towards phygital marketing, with social media and e-commerce playing a crucial role (Silvia et al., 2023). Scholars have explored various applications of this integration across different domains, including retail. Particularly, they have focused on an innovative approach to consumer behaviour (Johnson & Barlow, 2021; Silva & Cachinho, 2021). Existing literature emphasizes the transformative potential of using the metaverse to enhance user engagement and interaction by adding digital overlays to physical spaces (Chrétien-Ichikawa, 2022; Ioannidis & Kontis, 2023; Tse & Pun, 2024). It explores the hybridization of marketing tools, including phygital omnichannel promotion and contactless sales across new digital frontiers. Additionally, it examines the implementation of the empirical concept in world trade activities (Nozdreva et al., 2023); research has shown how retailers can use the metaverse to create immersive shopping experiences that combine digital product visualization with physical store environments, potentially transforming the retail industry (Mengalli et al., 2023). In addition to the need to measure how customers find, interact with, and consume content and images, the metaverse ecosystem has identified the need to optimize relationships with consumers in order to mitigate purchase difficulty gaps (Davies et al., 2024; Mengalli et al., 2023). Furthermore, the education sector has recognized the potential of the metaverse to facilitate immersive learning environments where students can engage with educational content in a dynamic and interactive manner, such as in a game (AydoÄydu et al., 2021; Guga, 2015). Likewise, the entertainment industry is at the leading edge of embracing digital metaverse experiences, allowing users to participate in interactive stories beyond the boundaries of traditional media (Del Vecchio et al., 2023; Giovannini & Bono, 2023; Russo et al., 2024). A number of studies highlight that these integrations are capable of transforming industries such as retail, entertainment, education, healthcare, etc (Terenzi & Vignati, 2021). While the literature acknowledges the myriad opportunities presented by phygital metaverse applications, it also highlights several challenges and considerations. Concerns about privacy, ethical implications, and technological limitations emerge as critical factors that warrant the attention of the scientific community.

Topic 2: Health Technology, cultural heritage and gaming

Researchers have investigated various applications of phygital technologies, including wearable devices, remote monitoring systems, augmented reality (AR) and virtual reality (VR) interventions (Bini et al., 2023) related to healthcare industry. These technologies have the potential to transform healthcare delivery by improving patient engagement, enabling personalized interventions, and optimizing clinical workflows. The convergence of virtual, augmented, mixed,

and extended reality, mobile tools, the Internet of Things, and artificial intelligence has enabled the growing symbiosis between human spaces and computers. This is leading to the emergence of mixed physical and digital ecosystems that will have a transformational impact on people's lives (Gaggioli et al., 2023).

The potential role that phygital systems could play in enhancing mental health and well-being is still under investigation (Spitale et al., 2019). By simulating realistic healthcare scenarios and providing immersive experiences, these technologies can enhance learning outcomes, improve patient comprehension of complex medical concepts, alleviate pain and anxiety during medical procedures, and support people with intellectual disabilities (Gelsomini et al., 2021). Wearable devices equipped with biometric sensors allow for real-time monitoring of vital signs and health parameters, which can facilitate early detection of health issues and empower individuals to proactively manage their well-being (Gennari et al., 2023; Sayem et al., 2023; Schiavi et al., 2023). The literature emphasizes the significance of human-centered design principles and interdisciplinary collaboration in developing effective phygital healthcare solutions (Barresi et al., 2023). By integrating insights from fields such as human-computer interaction and psychology, researchers can design intuitive and user-friendly interfaces that enhance usability and acceptance among healthcare providers and patients alike (Gelsomini et al., 2021).

Research in this topic has explored the potential of phygital gaming experiences to engage audiences with cultural heritage artifacts, sites, and narratives, linking health, heritage, and gaming, discovering the transformative effects of such experiences (Andrade & Dias, 2020; Cirafici et al., 2022). The integration of augmented reality, virtual reality, and mixed reality (MR) with gaming platforms allows users to explore virtual reconstructions of historical sites, interact with digitized artifacts, and participate in narrative-driven experiences that bring the past to life (Bollini, 2022; Borsotti, 2022; Marra et al., 2023; Turco & Giovannini, 2020), especially those that are inaccessible due to restoration work (Hallot et al., 2021). AR can provide additional layers of information to support physical exhibitions while also extending the knowledge produced beyond the art gallery's boundaries.

This highlights the immersive qualities of extended reality technologies and the phygital future that is emerging in the exhibition space (Brusaporci & Maiezza, 2021; Crossley et al., 2023). Researchers have explored the role of phygital gaming in fostering cultural understanding, empathy, and appreciation among diverse audiences. This transcends geographical and temporal boundaries, facilitating meaningful connections with heritage resources (Prajapati & Das, 2023). Moreover, the literature emphasizes the significance of collaborative and participatory approaches in developing phygital gaming experiences. This involves engaging stakeholders, such as cultural institutions, game developers, scholars, and community members, in the co-creation process (Lupetti et al., 2018; Piumatti et al., 2017; Praticò et al., 2019).

Topic 3: Fashion & Luxury

Phygital retailing blends the physical and digital worlds to create unique customer experiences. Papers included in this topic have examined how luxury fashion brands are using phygital approaches to create immersive and cohesive brand experiences that seamlessly integrate physical and digital touch points. While the applications of phygital retailing are on the rise, there is still a lack of understanding of what factors can influence customer experience, particularly hedonic factors (Banik & Gao, 2023). Through initiatives such as virtual fashion shows and interactive digital installations, brands can extend their reach beyond traditional brick-and-mortar stores and engage global audiences in innovative ways. With the increase in consumers' online and offline interactions, there is a greater need for marketers to prompt integrated customer experiences. This can be achieved through online and offline interactions (Lee et al., 2023). Phygital marketing is characterized by its focus on the quality of consumer experiences, but few papers have explored how neuroscience can be used to study these experiences (Johnson & Barlow, 2023). Additionally, the literature emphasizes the importance of phygital technologies in enhancing the exclusivity and desirability of luxury fashion products. These technologies enable brands to provide personalized and customized experiences that appeal to affluent consumers (Jacob et al., 2023). Some research questions explore how human interactions with experienced salespeople contribute to the value of the phygital experience (Samy Soliman & Erakat, 2023). Omnichannel retailing has transformed retailers' strategies for engaging customers in making purchase decisions (Mikheev et al., 2021). Contemporary luxury marketing literature addresses the research gap by explaining the role of phygital functionality in enhancing relationship building, social engagement, and trust and commitment development, resulting in a seamless customer experience and enhanced loyalty and patronage (Pangarkar et al., 2022). Researchers have explored the implications of phygital strategies for brand storytelling. They emphasize the importance of authenticity and heritage in conveying the brand's values and identity across digital platforms (Banik, 2021). Moreover, recent literature emphasizes the importance of luxury fashion brands implementing an omnichannel strategy that seamlessly integrates both online and offline channels to provide a cohesive and uninterrupted shopping experience for consumers (Mele et al., 2021). Current research aims to explore innovative ways in which luxury fashion brands can leverage phygital approaches to enhance brand equity, foster consumer loyalty, and drive sustainable growth in an increasingly digitized marketplace.

Topic 4: Customer experience

Consumers are nowadays accustomed to shift from physical to digital settings and the availability of phygital spaces opens up to novel opportunities to further enrich customer experience (Ballina et al., 2019). The spread of phygital environments has contributed to fill the gap between online and offline along the entire customer journey to deliver an enhanced customer experience, relying on the use of smart technologies (Mele & Russo-Spena, 2022).

Part of the literature included in this topic is focused on luxury customer experience. The intrinsic characteristics of luxury industry (high quality of physical products emphasised by ideals of legacy and craftsmanship as well as the services provided) make it look as mismatched with anything linked to digitalisation (Black, 2022). However, it is actually hugely impacted by the implementation of phygital solutions for enhanced interactions with customers (Kumar, 2023; Pangarkar & Shukla, 2023).

In this topic, research has evidenced the underlying mechanisms of the impact of phygital on customer experience. A key factor is represented by the medium used to provide services and interact with customers during the purchase process, such as mobile applications (Lawry, 2023; Silva e Sousa et al., 2022). Some studies deal with experience-related characteristics that make it phygital, such as the sense of touch simulation in a dematerialised environment (Ornati & Kalbaska, 2022) and phygital connectedness, intended as the tendency of consumers to showcase their physical experience with the product on social media networks (Kumar, 2023). Another aspect highlighted by scholars is the impact of phygital on customer relationship management performance metrics such as customer satisfaction, loyalty and retention (Mishra et al., 2023).

Topic 5: Education

The phygital environment is playing a key role in the digitalisation process of education, significantly accelerated by covid-19 pandemic (Fazzin, 2022; Zaitseva et al., 2023), which raised the need for remote or distance learning (Distefano, 2023), at all levels, from primary and higher education to university and beyond (Fazzin, 2022). Phygital education is the integration of traditional classroom methods with digital learning, thus going beyond the digital education practices developed during pandemic and restructuring the educational process in such a way that the role of both students and teachers is transformed (Zaitseva et al., 2023). It particularly fits students belonging to Generation Z, also known as phygital generation (Tolstikova et al., 2021). Scholars in the education field have started to investigate whether teaching effectiveness can increase in a phygital mode (Chaturvedi et al., 2021).

Literature evidences that phygital environments can innovate the educational process in different ways. It introduces new educational practices, based on the use of smartphones to foster socialization and collaborative learning (Fonseca & Mealha, 2022) as well as on the adoption of phygital textbooks to support an immersive learning experience to enable collaborative active learning (Prajapati, 2023). As emerges from the literature, the implementation of phygital learning practices can also take place by including gaming technologies in the educational process, providing students with the opportunity to train and rehearse their skills in a simulation environment (Zaitseva et al., 2023), also with the support of augmented reality (Chaturvedi et al., 2021). Education gamification in phygital environments is also reported as an effective solution for students with special educational needs (especially those aged between 5 and 12 years, for whom the border between physical and digital disappears), delivering a playful learning experiences by means of specific Apps (Goretti et al., 2020).

Some studies shed light on possible benefits of phygital education. Phygital solutions can therefore guide education towards enhanced inclusiveness, addressing the risk of digital exclusion for students with special needs (Efthymiou, 2023; Hemdan et al., 2023). In addition to being more inclusive, another great potential of phygital education highlighted in literature which however requires further investigation, is personalisation (Chaturvedi et al., 2021).

Topic 6: Tourism

The potential of the phygital environment in tourism industry mainly concerns the delivery of enhanced tourist experience. Tourists can indeed benefit from a dual physical-virtual world in a new experiential model that allows them to explore in an immersive and interactive way (Clemente et al., 2024)

A stream of literature evidences that phygital solutions are becoming increasingly popular in cultural institutions. Many studies in this topic provide examples of phygital applications in museums (Baldi, 2022; Baratta et al., 2022; Debono, 2021; Zhuang & Zheng, 2023). The phygital formula in such contexts represents a means to co-create cultural value (Clemente et al., 2024). The need for museums to implement phygital strategies and deliver phygital experiences has increased during pandemic but even post-pandemic scenarios involve the possibility to rely on phygital experiences. These scenarios may consist in offering a digital version of the physical tour or complementing the physical tour with some digital contents (Debono, 2021). As evidence by Clemente et al. (2024), some internationally popular museums such as Louvre (France), British Museum (UK), National Gallery (UK), National Museum of China (China) and Metropolitan Museum of Art (USA) have already implemented augmented/virtual reality based exhibitions and immersive tours as well as digital environments. Such solutions improve accessibility, enrich the visit and visitors' engagement, also allowing to personalise the visit with specific human-like interactions. According to the authors, such solutions contribute to the four dimensions of phygital experience: extended socialisation, extended self, extended sensation and extended setting. In some contexts, such as wine tourism, the phygital mode can be exploited to deliver an enjoyable learning experience concerning specific aspects tourist may be curious about (e. g. learn how to prune the vines wearing a virtual reality helmet instead of listening to the traditional explanations by winemakers), without losing human contact and relationship with tourists (Lorey et al., 2023).

By implementing a moderate digital approach to guide the physical visit can enhance the tension of artworks and expand the space for public discourse and the creation of game mechanisms that assign missions and roles to the public in a phygital manner, generates excitement and better engages participants. However, an excessive use of sensory stimulation may cause cognitive difficulty and result in negative user experience. The right balance should be found in

establishing a multi-dimensional dialogue relationship between “Person-Content-Object-Field” (Zhuang & Zheng, 2023).

Research in this stream also highlights the impact of the hybridisation of physical and digital components on destination performance, in terms of experience co-creation (Sustacha et al., 2022), tourists satisfaction and the overall competitiveness of smart tourist destinations (Ballina et al., 2019), destination recovery and resilience (Muangasame & Tan, 2023).

Topic 7: Retail experience

Retailers can improve customer engagement, facilitate informed decision-making, and enhance the overall shopping experience through initiatives such as interactive fitting rooms, virtual product try-on experiences, and personalized digital signage (Kumar et al., 2024). Publications included in this topic have examined how phygital technologies, including interactive displays, can be leveraged to create immersive and engaging retail environments that seamlessly blend online and offline interactions (Roten & Vanheems, 2023). The literature also emphasizes the importance of phygital strategies in addressing key challenges facing the retail industry, including showrooming, omnichannel integration, and declining foot traffic in physical stores. Due to mass customization, retailers cannot present all possible configurations in-store for customers to experience. In addition, consumers are shifting to online shopping (Van Rheden et al., 2023). Retailers can bridge the gap between digital convenience and physical touch, offering consumers the best of both-while driving brand loyalty and advocacy. Phygital customers’ needs and expectations that are satisfied through in store technologies and to detect the in store strategies that use these technologies to make the store attractive and experiential (Bonfanti et al., 2023). Furthermore, the impact of these technologies on consumer behaviour is explored, with emphasis on the role of sensory stimulation, emotional resonance, and social interaction in shaping purchase decisions and brand perception; to enhance the phygital customer journey and shopping experience, retailers aim to meet customers’ needs for utilitarian, hedonic, social, and playful experiences. These approaches increase gratification and emotions towards the acceptance of phygital retail, using user-generated content (Ray et al., 2023).

The literature analysed also highlights the importance of retailers adopting a customer-centric approach to phygital retailing, prioritizing seamless integration, personalized experiences, and data-driven insights to meet the evolving needs and preferences of the modern consumer. The in-store experience for customers can be enhanced through the use of phygital devices that showcase the appeal of technology to consumers. Retailers can leverage these perceptions to improve the overall retail experience (Boudkouss & Djelassi, 2021).

Current research has focused on understanding the long-term impact of phygital retail experiences on consumer satisfaction, brand loyalty, customer satisfaction, and business performance, as well as innovative strategies to maximize the potential of phygital technologies in driving retail innovation and competitiveness (Guzzetti et al., 2024; Lecointre-Erickson et al., 2021).

Research limitations. The study has some limitations. We conducted an extensive literature search to encompass all aspects of the topic, which resulted in the inclusion of some less scientifically rigorous document types in the sample (i.e. conference proceedings and book chapters). However, this was deemed appropriate at this explorative stage to conduct a broad investigation of such an innovative domain. Future developments of the research may address this limitation, applying additional filters to the research.

Managerial implications. The study provides some clarity on the exploitation opportunities of phygital reality and identifies a gap concerning the phygital applications to enhance social inclusion toward some disadvantaged and marginalised segments, thus providing insights on business opportunities to fill this gap.

Originality of the paper. The paper addresses a novel emerging topic for which research is still at its infancy, by applying a robust methodology to provide an overview of the state of the art. The findings show that a relevant outcome of phygital applications is represented by enhanced user and customer experience in different fields (luxury consumers, tourists, students). An overarching common thread that links some of the topics between each other is represented by the theme of inclusion. The phygital reality is indeed able to prevent some segments of students from being excluded as well as enables smart engagement strategies of various types of customers and tourists. However, phygital literature still lacks specific contributions able to unveil how the presence of phygital realities can enhance social inclusion, cultural participation and digitalization, by reducing marginalization and creating the conditions for better institutions, trust and social capital that in turn foster social cohesion and social sustainability. Future research may address this gap, investigating how phygital allows to enhance social inclusion toward some disadvantaged and marginalised segments (e.g. migrants, NEETs, the unemployed, older adults, cultural minorities, women, persons with disabilities, and those suffering from chronic disease and mental disorders).

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Exploring the Metaverse from the consumer perspective: insight from a systematic literature review.

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Abstract

The digital transformation has catalyzed the emergence of the metaverse, transitioning from a speculative idea to a vibrant digital ecosystem that merges digital and physical worlds. This research delves into the metaverse's scholarly landscape from a consumer perspective, utilizing a systematic literature review and the PRISMA Protocol to sift through academic contributions. From an initial dataset of 323 papers, 38 articles were rigorously chosen, revealing an uptick in metaverse-focused studies, with an emphasis on consumers. The analysis identified a preference for qualitative research methods and highlighted key journals as prominent publication venues. With a co-occurrence analysis, it has been possible to unearth interconnected research themes, emphasizing the metaverse's potential to transform consumer interactions and experiences. This work sheds light on the implications of digital technologies for developing new consumption models and proposes future research directions and practical applications across various industries.

Key words: *metaverse; marketing; consumer behavior; systematic literature review (SLR).*

Framing of the research. *The emergence of digitalization is reshaping our world, leading people to spend significant time on digital platforms (e.g., social media, branded apps, metaverse). The enthusiasm of consumers to engage in value co-creation processes and utilize tools that make them feel part of something, such as the metaverse, is noteworthy. The metaverse, a phrase initially introduced by Stephenson (1992), has transformed from a fictional idea into a flourishing digital ecosystem. It presents a series of virtual environments where users can effortlessly transition between digital and physical worlds (Zhao et al., 2022). This digital realm enables users to engage socially through digital avatars, supporting the creation of value and shared experiences. The metaverse integrates mixed reality (MR) technology, ambient intelligence, and progress in information and communication technologies (ICTs), thus acting as a connector between the digital and physical worlds (Gursoy et al., 2022; Buhalis et al., 2023).*

The integration of virtual economies within the metaverse highlights a pivotal shift in consumer engagement and economic transactions. The adoption of cryptocurrencies and NFTs within these environments not only facilitates a novel economic model but also reshapes consumer perception of value and ownership (Ferdig et al., 2022). This paradigm shift prompts a reevaluation of traditional marketing strategies and consumer engagement practices in the context of virtual commerce (Dwivedi et al., 2022).

Exploring the metaverse is vital for its capacity to alter the way consumers interact, work, socialize, and perceive the world. Functioning as a complementary virtual reality, the metaverse delivers immersive experiences unbound by the physical world's constraints (Yoo et al., 2023). It facilitates the discovery of virtual service businesses, interactions with virtual aspects of products and services, and participation in immersive experiences that enhance users' comprehension of offerings (Flavián et al., 2019). The metaverse goes beyond single products or platforms, encompassing a collection of interconnected virtual worlds that act as continuous spaces for information exchange and participation (Gursoy et al., 2022; Visconti, 2022).

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The social dynamics within the metaverse, including community building and social interactions, play a crucial role in shaping consumer behavior. These virtual communities offer a new avenue for marketing professionals to foster brand relationships and consumer engagement through innovative approaches that leverage the unique social fabric of the metaverse (Dwivedi et al., 2022; Barrera and Shah, 2023).

Investigating the metaverse is imperative for grasping its influence on various areas, including social interactions, commerce, education, and entertainment. Lately, researchers have turned their attention to aspects of the metaverse. For example, Narin (2021) performed a content analysis of metaverse literature, identifying key themes such as virtual worlds, augmented reality, and the social and economic implications of these digital environments. Likewise, Kim (2021) explored the metaverse's ability to boost interactive advertising, highlighting crucial issues related to privacy, ethics, and the assessment of goods and services within these virtual settings.

The significance of the metaverse is also highlighted by its capability to enable immersive interactions that reduce the perceived risks associated with service offerings. Utilizing virtual reality (VR), augmented reality (AR), and mixed reality (MR) technologies, the metaverse offers multisensory experiences that amplify individuals' engagement and satisfaction (Koochang et al., 2023). This immersive setting backs social and economic activities and brings about changes that redefine consumer behavior and value co-creation (Buhalis et al., 2019). As this digital arena progresses, research will be essential in guiding its development, ensuring the metaverse continues to be an inclusive, engaging, and worthwhile part of our digital future (Allam et al., 2022; Wang et al., 2022). From these considerations, the purpose of this paper is to understand the state of the art of the literature regarding the metaverse from a consumer perspective. Based on previous statements, it is vital to define the following research questions to guide our work:

RQ1: What are the main bibliometric variables, research trends and recurrent thematic areas in the use of metaverse from a consumer perspective?

RQ2: What are the knowledge clusters in the intellectual structure in this research area?

Purpose of the paper. The primary purpose of this study is to shed light on the metaverse from a consumer's perspective, marking a significant step towards understanding its multifaceted impact on consumer behavior and interactions within digital environments. By conducting a systematic review of existing literature, this work aims to dissect and analyze the prevailing research trends, themes, and conceptual clusters that have emerged around the consumer experience in the metaverse. Through this analysis, the study seeks to identify gaps in the current body of research, offering a foundation for future investigations to build upon. Additionally, it endeavors to provide valuable insights for both academics and practitioners by illustrating how the metaverse influences consumer engagement, value co-creation, and the overall consumer journey in digital realms. This study ultimately strives to contribute to the scholarly discourse on digital consumer behavior, paving the way for innovative research directions and practical applications in the evolving digital landscape.

Methodology. The study adopts a structured approach to examine academic works, utilizing a multi-step procedure known as the Systematic Literature Review (SLR) methodology. Chaudhary et al. (2021) highlight the SLR's benefits, including the precise selection of research that matches the inquiry question and contributes theoretical insights and frameworks that spur further investigation. The research employs the PRISMA Protocol, as outlined by Moher et al. (2015), to ensure a standardized selection methodology. Conference papers, books, book chapters, and PhD dissertations are excluded due to their minimal impact on academic literature. Following this, a content analysis is conducted on academic articles to extract key bibliographic information from studies focusing on metaverse and consumer. The analysis utilizes Microsoft Excel and VOSviewer Software for further examination. Initially, a bibliometric analysis is undertaken to investigate the research topic, identifying significant journal contributions and categorizing papers by their types and methodologies. Then, trends and thematic areas are explored through a co-occurrence analysis of keywords, providing insights into the evolving research landscape in this field (Tranfield et al., 2003). The PRISMA approach's initial step identifies the dataset and defines the research scope and focus, selecting the Scopus database for its extensive coverage and widespread use in research for its comprehensive selection of scientific journals, using as specific keywords "metaverse and consumer". These keywords have been searched within paper titles, abstracts, or keywords. This process resulted in a preliminary database of 323 records spanning from 2008 to February 2024. After refining through specific exclusion criteria: Ex1, non-article documents; Ex2, documents not in the business, management, or accounting fields; Ex3, non-English documents; Ex4, documents not published in peer-reviewed international journals, the database was narrowed down to 68 articles. The final phases of the PRISMA protocol involve setting eligibility criteria and selecting papers for the final sample after thoroughly reviewing all full-text articles. This led to the exclusion of 30 articles and the compilation of a sample of 38 bibliographic records. All bibliometric information from the final sample is exported to Microsoft Excel, with Scopus facilitating the extraction of essential data such as titles, abstracts, keywords, author names, publication years, citation counts, and journal names. This dataset is then enhanced with additional information relevant to the research objectives, particularly concerning the approach of the analyzed sample.

Results. The analysis shows a growing trend of publications exploring the metaverse from a consumer perspective. The distribution across years reveals a noticeable upward trajectory in the number of studies conducted. This trend underlines the escalating interest in this particular field especially in the last two years. In relation to research focus, 11 studies adopt a quantitative approach, 16 follow a qualitative methodology, 2 encompass a combination of both quantitative and qualitative methods, and 9 embrace a systematic literature review (Table 1).

Table 1. Paper type

Category	n	Percentage
Qualitative	16	42,10
Quantitative	11	28,94
Systematic literature review	9	23,68
Mixed methods	2	5,26

The preeminent outlet for distributing metaverse research is the *Journal of Consumer Psychology*, which encompasses three publications of 38 of the studies within our sample. Other journals that study this topic can be found in Table 2.

Table 2. Top 10 most relevant contributions

Journal	n	Percentage
Journal of Consumer Psychology	3	7,89
International Journal of Consumer Studies	2	5,26
International Journal of Contemporary Hospitality Management	2	5,26
Journal of Business Research	2	5,26
Journal of Retailing and Consumer Services	2	5,26
Psychology and Marketing	2	5,26
Tourism Review	2	5,26
AMS Review	1	2,63
Asia Pacific Journal of Marketing and Logistics	1	2,63
Business Horizons	1	2,63

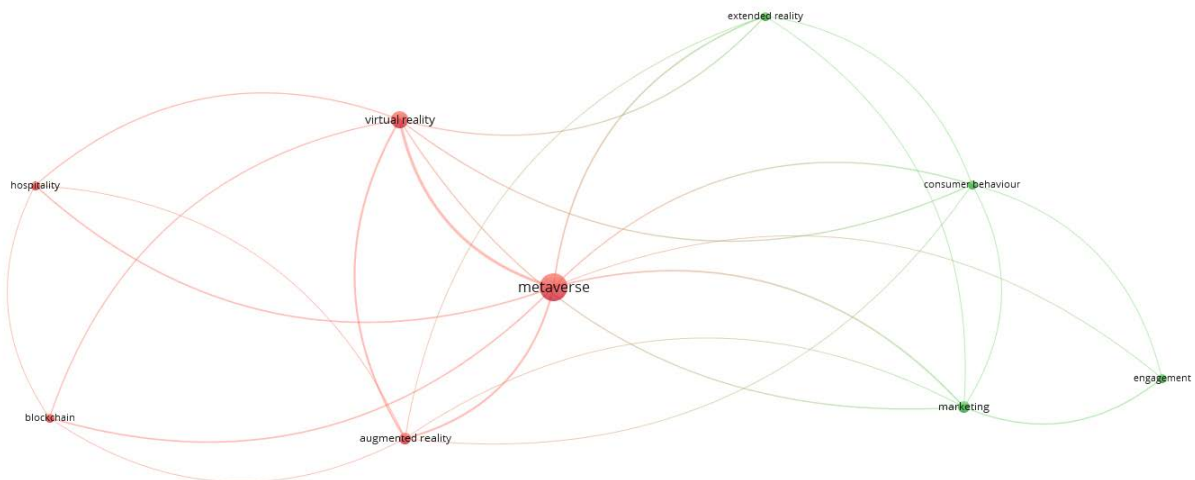
Utilizing VOSviewer software (Van Eck et al., 2010; Biggi and Giuliani, 2020; Secinaro et al., 2022), we conducted a co-occurrence analysis of keywords. This method, grounded in bibliometrics, was developed in the Java programming language. It empowers to chart networks among keywords, resulting in clusters that highlight primary research domains. Through co-occurrence analysis, the paper pinpoints instances where chosen keywords appear together in articles, signifying their interconnectedness. VOSviewer employs a natural language processing algorithm to gauge keyword associations and form clusters, color-coding them for differentiation (Van Eck et al., 2010). The resultant visual representation showcases “bubbles” their sizes reflective of keyword frequency within selected publications (Van Eck and Waltman, 2010). The findings enable us to distinguish and interconnect two discrete clusters, each comprising a collection of keywords exhibiting co-occurrence associations. A keyword is allocated to a sole cluster exclusively.

The bibliographic coupling consists of two clusters (Figure 1), encompassing 9 primary items and interconnected by 25 links. The cumulative strength of these links amounts to 57. In particular:

Cluster 1 (Metaverse and tools) comprises five items: augmented reality, blockchain, hospitality, metaverse and virtual reality.

Cluster 2 (Metaverse to engage consumers) comprises four items: consumer behavior, engagement, marketing and metaverse.

Figure 1. Co-occurrence analysis (VOSviewer)



Source: Our elaboration with VOSviewer.

The identification of clusters allows the authors to propose preliminary future research directions to expand the academic contribution on the topic. Starting from Cluster 1, the authors suggest investigating augmented reality (AR) in enhancing online shopping, blockchain's role in secure digital ownership systems, the potential of virtual hospitality experiences, architectural design principles of metaverse environments, and the educational potential of virtual reality (VR). For Cluster 2, proposed directions include examining how consumer purchasing decisions are influenced in virtual environments, the effectiveness of gamification strategies, the psychological effects of extended reality, and targeted advertising strategies assessing personalization versus privacy concerns.

Research limitations. This study has several limitations that warrant attention in future investigations. Given that the concept of the Metaverse is relatively new and continually evolving, the paper highlights that there is a scarcity of peer-reviewed literature specifically focused on the customers' point of view. This limitation affects the comprehensiveness of the SLR and requires researchers to include a broader range of sources in future studies. Initially, the systematic literature review was confined to the SCOPUS database. Subsequent research could broaden its scope by incorporating additional databases such as EBSCO, Web of Science, and Google Scholar. Moreover, the sampling strategy was restricted to the realms of business, management, and accounting. Expanding this to include disciplines like economics, psychology, and sociology could enrich the research's breadth and depth, providing a more holistic understanding of consumer behavior in the Metaverse. Besides, the possibility exists that certain pertinent studies were overlooked, either due to an incomplete set of keywords or the exclusion of relevant documents during the selection phase. Furthermore, the inclusion of studies predominantly from peer-reviewed journals may overlook valuable insights from industry reports, white papers, and conference proceedings that could provide practical applications and emerging trends not yet reflected in academic literature. In addition, the paper demonstrates that the Metaverse is a complex and multifaceted concept, and different researchers and practitioners define it in various ways. This heterogeneity in definitions poses challenges during the selection and categorization of relevant studies focused on customers, leading to inconsistencies in the review process. Furthermore, the Metaverse is undergoing rapid development, with new technologies, platforms, and applications, available for customers, emerging frequently. As a result, the literature available at the time of the review can quickly become outdated, making it challenging to provide a comprehensive overview of the current state of research in the field. Finally, the Metaverse intersects with various disciplines, including computer science, sociology, psychology, economics, and more. Conducting an SLR that adequately captures all relevant literature from these diverse fields and that focusses mainly on consumers' viewpoint requires expertise in multiple domains and may present challenges in terms of search strategy, study selection criteria, and synthesis of findings. Future studies, that address these limitations, require careful consideration of search strategies, inclusion criteria, and synthesis methods, as well as ongoing updates to ensure the relevance and currency of the review findings in the rapidly evolving field of the metaverse. Actually a future research agenda may focus on: (i) Conducting a SLR on the emerging technologies and platforms in the Metaverse. Given the rapidly evolving nature of the Metaverse, focusing on emerging technologies and platforms can offer novel insights. Research can explore how advancements in augmented reality (AR), virtual reality (VR), blockchain, or artificial intelligence (AI) are shaping customer experiences in the Metaverse. (ii) Focusing on the investigation of different cultural and ethical implications of customer interactions within the Metaverse. This could include issues such as privacy concerns, digital identity, cultural representation, and accessibility. (iii) Implementing a longitudinal Analysis. Instead of just providing a snapshot of current literature, it can be conducted a longitudinal analysis to track changes in customer perceptions and behaviors over time towards the Metaverse. This can help identify trends and patterns that might not be apparent in a static review.

Theoretical and managerial implications. This research provides both theoretical and managerial insights, bolstering the consistency and scholarly framework of existing literature, which will act as a foundational base for future investigations in this domain. Moreover, it introduces a unified perspective to research themes that have previously seemed disparate, by proposing a singular analytical approach. This unified perspective not only enhances the coherence of research within this field but also opens new avenues for comprehensive analysis, facilitating a deeper understanding of the subject matter for both academics and practitioners. To the best of the authors' knowledge, this is the first SLR that studies the Metaverse and its impact on consumers. The research findings provide theoretical insights to evaluate the relevance of the digital technologies related to the Metaverse in creating of new consumption models - not confined to the physical world's limitations – to define “hybrid customer experience” through a multi-sensory involvement of the consumer before the purchase phase, during the purchase and/or after the purchase. Secondly, it allows for an understanding of the current literature's themes on the topic, paving the way for future research and evaluating the academic challenges in terms of adoption of new research methods (e.g. Neuromarketing Techniques) and exploring of specific business contexts (e.g. Tourism, Retail, Gaming, etc.). A systematic literature review on the Metaverse from the customer point of view can have several important managerial implications for businesses looking to capitalize on this emerging trend. First of all, focusing on the analysis of clusters 1 and 2, the SLR provides original insights into what customers may expect from the Metaverse experience. This understanding can guide practitioners in developing products and services that align with these expectations, thereby enhancing customer engagement, satisfaction and loyalty. Besides, by analyzing the existing literature, managers can identify the key features and preferences that customers value in the Metaverse. This information can inform product development and innovation strategies to create offerings that resonate with customers and differentiate a company from competitors. In fact, understanding how customers ‘navigate’ and interact within the Metaverse can help businesses map out real customer journeys and optimize touchpoints to improve engagement and conversion rates. This insight can also aid in refining marketing strategies to effectively target and reach customers within the Metaverse.

Moreover, the SLR reveal to some extent initial insights into the importance of personalization and customization in the Metaverse experience. Managers can leverage this knowledge to tailor offerings and experiences to individual customer preferences, enhancing relevance and satisfaction.

In addition, focusing on the analysis of cluster 2, it is clear that customer trust and security are crucial in any digital environment, including the Metaverse. Insights from the SLR can inform managers about the factors that influence customer trust and perceptions of security within the Metaverse. This understanding can guide the implementation of robust security measures and strategies to build trust with customers.

Finally, by identifying gaps or areas of improvement in the current Metaverse offerings, managers can develop value-added services that address unmet customer needs or pain points. This could involve integrating additional features, enhancing user interfaces, or providing superior customer support within the Metaverse environment. In the light of these considerations, managers can even decide to use this foresight to anticipate customer needs and preferences, enabling them to stay ahead of the curve and adapt their strategies accordingly. Overall, for managers understanding the benefits of Metaverse serves as a powerful competitive tool to achieve consumer engagement and involve the customers in the value co-creation of experiences, maximizing consumer-brand relationships in the long term.

Originality of the paper. This section elaborates on the originality of the work, positioning it as one of the first to examine the metaverse from a consumer perspective. While other systematic literature reviews exist in the field, none, to the authors' best knowledge, specifically focus on the consumer aspect. By analyzing existing papers in the literature, this study has been able to identify previously discussed topics, thereby outlining how future research can be conducted to benefit both academics and managers. This approach not only underscores the uniqueness of the work but also highlights its contribution to expanding the understanding of the metaverse's impact on consumer behavior. Moreover, considering integrating insights from various disciplines such as business, management, and accounting provide a holistic understanding of customers' viewpoint in the Metaverse. This cross-disciplinary approach offers unique insights that needs to be better explored in existing literature reviews. Finally, starting from the analysis of the four items included in cluster 2 (consumer behavior, engagement, extended reality, and marketing) helped the researchers to conduct an initial comparative analysis of how customer experiences in the Metaverse differ from those in the physical world or other virtual environments. Highlighting these differences shed light on the unique challenges and opportunities of the Metaverse that have to be better explained in theory and practice.

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Fifty Shades of Black Friday

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Abstract

Promotional events, such as Black Friday and Singles' Day, have become prominent fixtures in the calendar worldwide, offering consumers significant discounts and driving immense sales volumes. These events originated in different parts of the world but have gained global recognition due to the proliferation of e-commerce and international trade. They're characterized by retailers offering substantial discounts, both online and in-store, prompting a frenzy of consumer activity. They have also been present in the Italian market, and it might be worth researching today about the effectiveness of these promotions, between different media and channels, also evaluating the implications in terms of sustainability of the customer journey. Through two sessions of three Focus Groups each, this contribution seeks to bring out the point of view of Gen Z, with the dual purpose of integrating the stream of literature on Big Discount Days (BDDs) and providing some managerial implications for the companies.

Key words: Black Friday; Big Discount Days (BDDs); Gen Z; Focus Groups; sustainability; unplanned purchase

Framing of the research. The big discount days were first implemented in the USA under the name "Black Friday", the first Friday after the Thanksgiving: some stores' sales continue to Monday (the so called "Cyber Monday") or for a week ("Cyber Week"). From the United States this shopping tradition has recently spread to Europe, while in Eastern countries Singles Day, November 11th, is very popular. What do these days have in common? Which centralize a large part of people's shopping activities and excitement, across different channels and generations. Today Black Friday and Singles' Day are monumental promotional events that continue to shape consumer behavior and drive substantial economic activity on both a national and global scale. What is influenced is not only the purchasing behavior of the consumer, but also the management of promotions by brands and distributors, who chase, imitate and/or contest these days of deep discounts at a global level. Anything can be done except ignoring them.

Parallel to the cross-countries diffusion, new traits and contaminations have appeared which are modifying its essence (Thomas and Peters, 2011): consumers are shopping earlier, moving online, taking advantage of delivery and curbside pickup, and expecting retailers to provide a safe, socially distanced shopping experience (Peters and Thomas, 2022). This shift represents a push to investigate the phenomenon more deeply. Therefore, the Black Friday and Single Days event have been previously examined trying to understand consumer intentions (Swilley and Goldsmith, 2012; Lennon et al., 2018), within the context of literature on marketing promotions (Khodabakhsh et al., 2018), in terms of communicational ritual (Bell et al., 2014), or focusing on specific Country (Spain in the case of Giroto et al., 2023; Botswana in Jaiyeoba et al., 2020; Greece in Tsiotsou, 2017; USA in Harrison et al., 2010 and Kwon and Brinthaup, 2015). Moreover, literature pointed out both positive and negative emotions on Black Friday, where positive emotions were connected to excitement and happiness, whereas negative emotions involved anger, anxiety, belligerence, disgust, distress, irritability, sadness, and tension (Taylor et al., 2011; O'Sullivan, 2016; Tzeng et al., 2020). Yet, some aspects still remain unanalyzed by the literature. In particular, to the best of our knowledge: the relationship between planned and unplanned purchases over these days, the cross-channel analysis trying to investigate the vocation of online and offline channels in the different stages of shopping behaviour and the theme of economic and environmental sustainability. Topics that we believe are particularly relevant to Gen Z.

Purpose of the paper. Thus, the research questions were as follows:

RQ1) How effective is the Big Discount Days (BDDs) promotion today in determining planned and/or unplanned purchases?

RQ2) Is this promotional effectiveness greater online or offline, or is it the same? Are the two channels competing with each other? How does the experience change between online and offline? What role do these channels have in the phases of the customer journey?

RQ3) How much will the Gen Z's greater sensitivity towards environmental and economic sustainability impact the effectiveness of these mass purchasing days?

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Methodology. To investigate these aspects, six Focus Groups (Lederman, 1990; Creswell and Creswell, 2018) were carried out, with a first convocation two weeks before Black Friday 2024 and a second convocation ten days after Black Friday 2024, to collect expectations, sentiment and planning (first convocation) and measure actual purchasing behavior, feelings and level of satisfaction *ex post* (second convocation) regarding the shopping journey just experienced. The choice of a double call for the three groups (for a total of six Focus Groups) was aimed to investigate the intentions, perceptions and also the effective behaviors, since our aim (RQ1) was to investigate the effectiveness of the promotional lever of the Big Sales Day in determining planned purchases and/or unplanned. The topic addressed by RQ2 and RQ3 instead emerged both in the first convening session and in the second.

In detail, the participants all belong to Gen Z. The six Focus Groups were run online (via Microsoft Teams) and involved 24 people (8 people per group: the same group was called before and after Black Friday). The participants were selected using Authors personal networks (opportunistic sampling) according to the following criteria: 1) to have shopping experience both online and offline and 2) have known what Black Friday was for at least 2 years. In collecting the availability to participate in the focus group studies, a small monetary incentive (10 euros) has been offered for participation (Van Laer et al. 2012).

The moderators adopted a soft-empathetic style of conduction making sure that the group dynamics facilitated the emergence of reliable information: through moderation, was ensured 1) the discussion of all points highlighted by previous literature, and 2) a friendly and neutral environment, ensuring that everyone could express their thoughts trying to soften the double social desirability bias. Participants' privacy was ensured at the beginning of the meeting, specifying that any information would have been traced anonymously and in aggregate form. Furthermore, the authorization to record the conversations has been requested and obtained. In order to conduct ethical research, participants were also assured full access to the research outputs once published.

The focus group protocol was designed on literature review and included the following key questions: prevalence of which feeling (impatient waiting and/or overwhelmed by choice/information overload), and how this feeling has changed or not year after year; touchpoints involved to collect information; planning and budgeting, including the impact of planning on "in view of" purchasing stops; purpose of any purchases (for yourself, in view of Christmas, ...); role and function of online and offline sales channels; perception and propensity for risk/innovation (purchases of already known products vs. new products and markets); subscription to newsletters/offers that could encourage loyalty even *ex post*; payment systems (deferred or not); aspects of economic and environmental sustainability considered; actual experience (planned/unplanned purchases ratio, budget used, overall sentiment; Black Friday-Cyber Monday ratio); functional aspects (delivery, couriers); weight and role of any returns. Alongside these planned points, other results emerged which were not foreseen in the schedule, as typically happens in qualitative research, and which will be treated in the next Results section.

Even if this is a small-scale study based on three focus groups, the results can be considered reliable, because the differences that emerge from the three Focus Groups are few and small, and we believe that the exhaustiveness criterion has been reached.

Results. From the analysis of the considerations that emerged during the research phase, it was possible to deduce the new meaning that these days have for the specific generation, the relationship between planned and unplanned purchases across different media and channels, and how these days are dis-connected with the theme of conscious shopping behaviour and of sustainability.

RQ1 discussion: From the discussion of the Focus Groups, it emerges without doubts that the majority of purchases during the typical promotional days of Black Friday are planned. Even the choice to join or not is planned: the participants resolutely told us how they would behave, joining or not, and there were no *ex-post* changes. This also applies to the choice of channels: those who had announced that they would give preference to online predominantly used online, and vice versa. Those who were afraid of making unplanned purchases didn't make them anyway. During the discussion we tried to understand whether budgetary constraints determined the preponderance of the planned part, but this reading was not confirmed. Simply, we were told, Black Friday offers are not perceived as that unmissable, now having many entire periods of offers beyond the seasonal sales. A certain distrust towards Black Friday also emerged, cross-channel: the fear of finding old clothes and objects, the feeling of being looked at with judgment in physical stores by sales assistants, the feeling of having a lower level of service (for example, the perception that it is easier for couriers to lose a package or delay delivery due to the rush) leads some people to give up from the start. Those who had a shopping list, perhaps already containing Christmas presents, were satisfied with having completed the task. In fact, strong planning often leads to eroding sales for the Christmas period, thanks also to the growing number of days of accepted returns (up to three months, even covering Valentine's Day). In the shopping lists there are, and it is almost obvious considering what previously discussed, above all already known products and brands: this moment does not currently represent an opportunity to get to know new companies. Gen Z appeared to be very informed and skilled, not easily influenced by emails and promotional messages (which were instead considered rather excessive): among the most used tools for planning and getting information there are certainly wishlists, Telegram channels of content creators, YouTubers, broadcast channels. For physical stores, also windows are very important to support communication.

RQ2 discussion: Promotional effectiveness does not seem to be perceived as different between online and offline channels: it is simply easier to collect information online, because price communication is more monitorable and, we were told, applications capable of monitoring dynamics pricing are often used, also for activating alerts and memos. Offline, many people perceive it as difficult to monitor price developments. The two channels do not compete directly with each other, since it is not the degree of promotional offer that determines the choice for one or the other: those who

choose online do so because they generally prefer to buy online, they have a greater level of confidence with online environment and appreciate the online advantages. Those who select offline channels during these periods do so because they have a clear preference for the physical channel, contact with the sales staff and the pleasure of in-store shopping. In some cases, these channels intersect during the customer journey: for example, for those who buy online it is very appreciated to be able to make a return offline, just as for those who buy offline it is very useful to receive information online, such as through the WhatsApp Business channels run by small independent shops that perhaps don't have a website. Finally, both online and offline, no clear distinction emerged between Black Friday and Cyber Monday, which were instead perceived as absolutely overlapping and indistinguishable events.

RQ3 discussion: Probably because it was a strong planning of the purchasers that emerged in parallel with a growing decrease in the promotional effectiveness of Black Friday, among the people involved in the study there was no strong concern about the issue of economic or environmental sustainability specifically connected to Black Friday. No one, for example, claimed that they would buy more than necessary thanks to the possibility of paying in installments. The element that emerged most is undoubtedly linked to the environmental sustainability of online shopping deliveries. Finally, very few were aware that for ethical reasons some companies had opted out of joining Black Friday promotions. Montura was one of the few to be cited.

Research limitations. The study is based on a qualitative research method, and this implies the typical limitations of qualitative research, including the reduced generalizability of the results. However, this is not a preliminary study: the research hypotheses determine the choice of the Focus Groups, in order to investigate the deeper reasons and the level of awareness of consumers thanks to the stimulation of conversation between peers. In order to increase its robustness and value, we could proceed by expanding the number of countries involved and/or apply the RQs to other generations, maybe more involved in BDDs.

Managerial implications. Finally, Managerial Implications for Brands were discussed as the essence of Black Friday & co has changed: this section included strategies producers and retailers can use to engage shoppers across different channel, without losing sight of the new value sets of Gen Z.

The main managerial implications that emerge from the Focus Group discussion is an invitation to Brands not to focus only on the promo, but to consider the Customer Experience in its entirety: people, especially in physical stores, have become wary of certain offers, and they often feel like “second class customers” (paradoxically, customers are surprised when they aren't treated badly in stores on Black Friday!). It is necessary to improve the customer's overall CX, to transform this moment into an opportunity to create a lasting relationship with the customer and not just a single sale. The low level of satisfaction with online and offline experiences seems to force Brands to better prepare for the wave of requests linked to Black Friday and Cyber Monday, strengthening the stability/reach of sites and apps and investing in more staff in physical stores with advance. If online brands/retailers seemed to have learned to manage, at least in part, the greater turnout, this is not the case for physical stores, where queues outside and very crowded shops are often reported: physical retailers, perhaps also looking at online retailers, could plan systems for managing queues and store attendance, through visit planning systems or events that entertain people while they are waiting. As for online retailers, greater planning in terms of production capacity also translates into greater investment in logistics strength, to ensure punctual and well-managed deliveries. In this, big players like Amazon set very high standards. However, some of the participants highlighted that in this time of the year, a small drop in the level of service is considered almost physiological, and therefore acceptable.

The second aspect that must be considered is the weakening of the promotional leverage, which risks triggering a vicious circle: the offers always start earlier (from Prime Day at the beginning of October, for example), and this means that the only distinction for Big Promotional Days such as Black Friday is the depth of the discount, which must be increasingly deeper, leading many times to a loss of margins. Literature has always underlined that promotions must be short and deep to be effective: today companies are adopting the opposite behavior. It also emerges from the Focus Groups that Gen Z are very attentive to monitoring promotions, thanks to a variety of channels such as Telegram and YouTube, and is therefore absolutely capable not only of recognizing the evolving depth of the discount, also for long periods (months), but of noticing situations (they seem growing) in which brands and retailers cheat customers by offering discounts on Black Friday that are lower than other days. This promotional management therefore determines not only a lower effectiveness of the promotional lever, but also a potential fracture/loss of trust between the Brand and the customer, who feels “ripped off”. In rethinking greater promotional effectiveness, with clearer and time-limited discounts, Brands should also communicate their policies, to invest in building trust. For example, those brands that specify in advance the arrival of an important promotion are extremely appreciated: in that way customers will have the opportunity to plan the purchase and will not find themselves in the unpleasant sensation that often happens when making a purchase and receiving a promo within a few hours. Furthermore, the policy adopted by some brands of incremental discounts as Black Friday approaches seems to put some customers in crisis, who are never sure when the right time to buy is, fearing at the same time that the product will sell out. Once again, a demand for more transparent promotion communication clearly emerges. For some, the process of gathering information is very burdensome, and leads to significant levels of dissatisfaction and fatigue, even to the point of giving up.

The fact that in Italy BDDs typical of other countries are also recently celebrated, such as Single Days, makes the occasions very little distinctive: there are many opportunities to create more distinctive way to manage promotions.

Currently, during Black Friday and others BDDs is perceived a dangerous overlapping level of offers across different brands and channels, which make them all perfectly substitutable.

Since from the Focus Groups emerges, in confirmation of the reading, an absolutely omnichannel customer journey in every phase, which involves even non-traditional touchpoints for the collection of information (role of influencer broadcast channels, for example), it is crucial for Brands to ensure a fluid and seamless experience between sales and communication channels, starting to cover even the less obvious channels. On the other hand, some channels seem to be much less used to communicate Black Friday offers, such as TV or print media, where there is no perceived crowding.

In closing the Managerial Implications, it is worth noting that among the people involved in the study there was very little awareness of the companies that did not join Black Friday, for the most disparate reasons (economic or ethical, mainly). The advice that emerges from this is to invest in communicating this choice, in order to create awareness and differentiate yourself. However, this concerns sectors where participation in Black Friday is expected, such as clothing and consumer electronics, for example: instead, sectors have emerged, such as art or education, in which participation is not expected.

Originality of the paper. We believe the first element of originality derives from the continuous evolution of the phenomenon under study, where the promotional lever effectiveness has been shown to be changing year after year, as are consumers: increasingly skilled, prepared, bored and with greater attention to the economic and environmental sustainability of their purchases. The topic of promotional effectiveness must be studied in a constantly updated manner precisely because of this changeability, linked to market and demand factors. Moreover, to the best of our knowledge, this is the first contribution that tries to contextualize the role of Big Discount Days (BDDs) promotion in determining planned versus unplanned purchases, also using an intertype competition (online and offline, across different sectors) lens. Further elements of originality are the focus on Gen Z and the Italian market.

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Track 7
Purpose-driven Businesses

Entrepreneurial Ecosystem and Proximity: a framework for Social Ecosystem Development

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Abstract

In recent decades, studies on entrepreneurship have evolved from an analysis focused on the individual to a broader perspective centered on the community, introducing the concept of the entrepreneurial ecosystem. This concept represents an interconnected network of actors influencing the creation and trajectory of businesses in a geographical region. Over the years, literature has explored various dimensions of these ecosystems, including the involved actors, physical infrastructures, and entrepreneurial culture. However, recent research has highlighted the need to analyze entrepreneurial ecosystems at various levels of proximity. This study proposes to examine the movement of BCorps as a case study to understand how different forms of proximity influence the development of social entrepreneurial ecosystems. Through a qualitative methodology, the aim is to provide a new perspective on the interaction between social ecosystems and entrepreneurship, thereby contributing to the understanding and development of social entrepreneurial ecosystems.

Key words: *Entrepreneurial Ecosystem; Proximity; Sustainable; BCorp; Benefit Corporation; Case study*

Framing of the research. *Towards the end of the 1980s, there was a shift in entrepreneurship studies, moving from an analysis focused on the individual and their personality to a broader perspective centered around the community (Stam et al., 2015). During this period, the conceptual foundations of entrepreneurial ecosystems emerged, taking into account the influence of social, cultural, and economic forces in the entrepreneurial process (Aldrich, 1990). The first definition of an entrepreneurial ecosystem is attributed to Cohen (2006): “Entrepreneurial ecosystems represent a diverse set of inter-dependent actors within a geographic region that influence the formation and eventual trajectory of the entire group of actors and potentially the economy as a whole...Entrepreneurial ecosystems evolve through a set of interdependent components which interact to generate new venture creation over time.”*

In the initial literature, the ecosystem was explored through three main conceptual frameworks combining different disciplines: economics, geography, and sociology (Feld, 2012). Furthermore, it was highlighted that the entrepreneurial ecosystem comprises three dimensions: the actors involved and their interactions, physical infrastructures, and entrepreneurial culture (Cohen, 2006). Building on these premises, Spigel (2017) proposed three categories of tangible and intangible attributes describing the configuration of an entrepreneurial ecosystem: cultural, social, and material. In recent years, the concept of an entrepreneurial ecosystem has attracted considerable attention (Stam, 2015; Stam & Spigel, 2017; Theodoraki et al., 2018; 2022), and it has been understood that the entrepreneurial ecosystem, as a highly complex construct, needs to be studied at various levels of analysis (Theodoraki and Messeghem, 2017). Indeed, as the literature progresses, the geographical dimension has increasingly expanded its boundaries (Stam and van de Ven, 2019; Theodoraki and Catanzaro, 2022), and the need to analyze entrepreneurial ecosystems through a multilevel approach has become more apparent (Theodoraki and Messeghem, 2017). Indeed, although geographic proximity facilitates interactive learning, it is neither a necessary nor a sufficient condition for learning to take place; in this sense, geographic proximity probably only reinforces other dimensions of proximity (Boschma, 2005). In fact, as highlighted by Boschma (2005), geographic proximity is just one of the proximities underlying the development of an entrepreneurial ecosystem: cognitive, organizational, social, institutional, and geographical proximity. Cognitive Proximity is defined as the extent to which actors share a similar knowledge base and expertise, enabling them to learn from each other. Organizational proximity is defined as the extent to which relationships are shared within or between organizations. It involves the degree of autonomy and control that can be exercised in organizational arrangements. As highlighted, too much organizational proximity can lead to a lack of flexibility and innovation, while too little can lead to a lack of control and increased opportunism. Loosely coupled systems are suggested as a balance, providing both control and flexibility for interactive

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learning and innovation. Social proximity includes the depth of interpersonal connections among agents at a microscopic level, based on trust established through various personal ties such as friendships, family ties, and shared experiences. It is crucial to understand that these connections are not solely based on formal agreements but are rather rooted in mutual understanding and reliability; therefore, in social proximity, the foundation lies in trust-based relationships. A third dimension of proximity identified by Boschma (2005) is Institutional proximity, which is instead associated with the macro-level institutional framework. Therefore, new studies are needed to analyze the role of multilevel proximities in the entrepreneurial ecosystem formation process. As highlighted in the literature (Acs et al., 2014), entrepreneurs are central actors in the EE building process. However, the success of EE performances relies on interactions among three components: individuals, organizations, and institutions (Alvedalen & Boschma, 2017; Theodoraki et al., 2022). Following this approach, the individual is defined in a broader sense; indeed, as argued by some scholars (Qian et al., 2013), not all individuals involved in the EE are connected to the firm and thus to market opportunity, but they are involved in the entrepreneurial ecosystem because they have different roles and objectives. In this sense, it is interesting to study the motivations of different types of people, organizations, and institutions deciding to become part of the EE, in order to identify the lowest common denominator. Careful work in this direction has been carried out by Audretsch and Belitski (2017), who described the relationships within the six domains of the ecosystem framework conditions. Important for the development of the literature is the integrative model of entrepreneurial ecosystems proposed by (Stam & Van de Ven, 2021) consisting of ten elements (formal institutions, culture, networks, physical infrastructure, demand, leadership, talent, knowledge, finance, and intermediate services). These elements are mutually interdependent and co-evolve in a territory).

Purpose of the paper. In recent years, there has been a considerable increase in interest in Entrepreneurship Ecosystems (Audretsch and Link, 2019), as policymakers, practitioners, and scholars have recognized their valuable role in supporting the development of economies and societies (Autio et al., 2018; Cloitre et al., 2022). Concurrently, the growing interest in entrepreneurship ecosystems has focused on understanding the role of entrepreneurship in the dynamics of value creation and capture within complex and multilevel economic systems (Acs et al., 2017; Simatupang et al., 2015; Volkmann et al., 2021).

In particular, scholars in entrepreneurship and management have emphasized the importance of interactions among different actors within an entrepreneurship ecosystem in terms of creating value for the territorial context. Despite dynamism being foundational to the definition of an entrepreneurship ecosystem (Cohen, 2006; Audretsch and Belitski, 2016; Acs et al., 2014), current literature appears to adopt a predominantly static framework in analyzing actor relationships, with little attention to ecosystem evolution. This approach, in our view, fails to account for changes and dynamics that may occur within the ecosystem. Indeed, despite the conceptual appeal of network dynamics, empirical analysis of network dynamics in entrepreneurship studies remains scarce (Hoang & Antoncic, 2003; Gustafsson & Autio, 2011), highlighting the need for a more dynamic approach to studying entrepreneurship ecosystems that considers network evolution over time.

The aim of this study is twofold: firstly, we aim to examine the interconnection of various dimensions of proximity (Boschma, 2005) in the development of entrepreneurship ecosystems. By analyzing the relationship between these dimensions, we seek to gain a deeper understanding of how they collectively influence the creation and growth of successful entrepreneurship ecosystems. Many authors underscore various proximities as central elements in ecosystem formation. Specifically, significant attention is given to geographical proximity (Cohen 2006, p. 3; Stam and Spigel 2017, p. 1). However, another central element in ecosystem development, yet to be thoroughly analyzed, is "the sharing of the same goal" (Theodoraki, 2018). The second objective is to analyze the social aim within the theoretical framework of entrepreneurship ecosystems, particularly understanding how different types of proximity impact the development of Social Entrepreneurial Ecosystems. The main goal of the research is not to explain variations in specific outcome variables but to analyze the network creation process by examining the role of proximity in entrepreneurship ecosystem development. While literature extensively highlights proximity as a central element in entrepreneurship ecosystem development, little attention has been given to other types of proximity beyond geographical (Ancona et al., 2023). This article aims to demonstrate how the presence of various types of proximity, along with the diffusion of new communication and network technologies, can support the development of entrepreneurship ecosystems that do not exhibit strong spatial proximity. Simultaneously, with this work, we aim to contribute to the development of research that links entrepreneurship ecosystems with sustainability research in a broad sense (Theodoraki et al., 2018; Cloitre et al., 2022; Theodoraki et al., 2022; Audretsch et al., 2024), not only tied to the environment but also to social sustainability (Audretsch et al., 2019; Volkmann et al., 2021), understood as the ability to generate value for all stakeholders involved in the ecosystem, including community stakeholders. Given the increasing pressure of fundamental social challenges, which include but are not limited to climate change, it is increasingly necessary to investigate the peculiarities of sustainable business creation through the perspective provided by the concept of Social Entrepreneurial Ecosystems. However, despite the importance of the theme, so far only a small number of studies have explicitly focused on issues regarding the social goals of business environments within the conceptual framework of ecosystems (Volkmann et al., 2021). Therefore, starting from the notion of a Social Entrepreneurial Ecosystem (SEE), understood as a concept that relates entrepreneurship ecosystems to sustainability issues and focuses on promoting sustainable entrepreneurship (Volkmann et al., 2021), we have decided to analyze an entrepreneurship ecosystem that aims to adopt a multi-level approach to social entrepreneurship to address global challenges (Welter et al., 2019): the B-Corp movement. The B Corp movement is a global initiative aimed at redefining success in the business world by promoting companies that prioritize social and environmental impact alongside financial profit. B Corps are for-profit companies that choose to undergo a certification

process by the non-profit organization B Lab, which evaluates their overall performance in terms of governance, social and environmental aspects, as well as their responsibility and transparency. To achieve B Corp certification, companies must meet rigorous standards of social and environmental performance, legal accountability, and transparency. These standards include various aspects of business operations, defined as "Impact Areas": Governance, Workers, Community, Environment, and Customers. The B Corp movement aims to encourage businesses to adopt more sustainable and responsible practices, with the ultimate goal of achieving positive outcomes for society and the environment. Through voluntary adherence to these standards and successful certification, B Corps demonstrate their commitment to using business activity as a force for the common good. Since its inception, the B Corp movement has seen significant growth, with thousands of certified B Corps operating in various sectors and regions worldwide. These companies range from small startups to large multinational corporations, united by their shared commitment to balancing profit with a broader purpose and generating a positive impact on the world.

Methodology. In the study of entrepreneurship ecosystems, various methods can be employed (Stangler and Bell-Masterson, 2015). However, according to Spilling (1996), the multitude of actors, their roles, and the different factors of complexity that characterize ecosystems make their study more intricate. Therefore, a qualitative method "seems particularly appropriate for exploratory studies in entrepreneurship research" (Dana and Dana, 2005, p.86). Given the exploratory nature of the research question and objectives, we decided to employ an in-depth qualitative research methodology to develop a theoretical framework. To achieve this goal, we followed the strategy recommended by Glaser and Strauss (2017) to develop a theory based on empirical data. Our research design is based on a single case study since, as widely recognized in the literature, it is a relevant methodology for exploring and understanding complex phenomena still underexposed to the research community (Yin, 2013). The study of a single case was based on the national BCorp ecosystem, chosen as a case study to extract the theoretical framework. In particular, we scrutinize the ecosystem of B Corps within the Italian landscape. The selection of the Italian context is motivated by several factors. Firstly, various studies have highlighted the active engagement of Italian enterprises in collaborative endeavors aimed at both entrepreneurial and social objectives (Cucino et al., 2024; Ferrigno and Cucino, 2021). Secondly, research on the Italian context elucidates how Italian enterprises are proficient in fostering collaborations that yield social innovation within the community (Annesi and Cucino, 2023). Finally, since the first B Corp was certified in Italy in 2013, the Italian movement has grown significantly, reaching 100 companies in 2018 and 240 in 2023, making Italy the second country in the European Union in terms of the number of B Corps (www.bcorporation.eu).

The analysis proceeded in three stages. Initially, we reviewed the literature on entrepreneurial ecosystems and proximity to ascertain any convergence between the core elements of the entrepreneurial ecosystem and the BCorp model. Subsequently, we assessed whether the BCorp movement could be categorized as a sustainable social entrepreneurship ecosystem, necessitating alignment with the ecosystem components delineated in Cohen's (2006) model and congruence with the entrepreneurial ecosystem model formulated by Stam (2015).

In the third phase, currently underway, we are gathering information on Italian BCorps. Specifically, we are collating secondary data on Italian BCorps to examine individual ecosystems. Following this, we will conduct qualitative interviews with select representatives of Italian BCorps. These data will facilitate triangulation in constructing the process of creating the entrepreneurial social ecosystem and delineate the role of proximity in each phase.

Results. The primary aim of this study is to furnish an analytical framework that elucidates the role of various types of proximity in fostering the development of a social entrepreneurship ecosystem. While existing literature predominantly concentrates on geographical proximity, our research brings attention to other forms of proximity, notably institutional proximity, which have been comparatively overlooked. Through an examination of an unconventional entrepreneurial ecosystem, our objective is to illustrate how robust levels of various proximities, particularly institutional ones, facilitate the establishment of ecosystems among actors who may not be physically proximate.

Specifically, our study has delineated a three-phase process in constructing the entrepreneurial ecosystem. In the initial phase, termed "community building," actors with similar skills and knowledge facilitate mutual learning (cognitive proximity). Subsequently, in the "legal recognition" phase, the entrepreneurial ecosystem endeavors to attain legal acknowledgment of the entrepreneurial endeavor (institutional proximity). Moving to the "development" phase, emphasis is placed on internal and inter-organizational relationships (organizational proximity), with companies seeking financial backing to fortify the social entrepreneurial ecosystem. The final phase entails consolidation, characterized by interpersonal connections among agents founded on trust established through personal ties (social proximity).

Furthermore, our research delves into the specific dynamics within each phase, aiming to provide insights into how proximity influences the interactions and collaborations among ecosystem actors. By comprehensively examining the interplay between different forms of proximity and the various phases of ecosystem development, we seek to contribute to a deeper understanding of the mechanisms underpinning the emergence and growth of social entrepreneurship ecosystems.

Research limitations. The analysis is conducted on the Italian BCorp movement, and therefore, the study is conditioned by the specific characteristics of the Italian context. Even though the BCorp movement is international and the companies adhering to it follow uniform criteria, belonging to a country, with all that entails legally, socially, economically, and culturally, significantly shapes the approach of individual actors and thus the ecosystem. It is also for this reason that the decision was made to analyze the BCorp movement at the national level rather than internationally. Despite the efforts made in this study, there are certainly opportunities for further research in the field of entrepreneurship ecosystems and sustainability. It would be interesting to expand the research by including a broader sample of

entrepreneurship ecosystems, both at the national and international levels, to obtain a more comprehensive and comparative view of proximity dynamics. Additionally, it could be useful to examine in more detail the impact of different dimensions of sustainability (environmental, social, and economic) on the entrepreneurship ecosystem and how these dimensions mutually influence the value creation process.

Managerial implications. The research presents intriguing managerial implications for the development of entrepreneurial ecosystems, highlighting several key considerations. One of the main observations concerns understanding the dynamics of "proximity" within ecosystems. In addition to traditional geographical proximity, the importance of other types of proximity, such as institutional and social, is emphasized. This means that managers can focus not only on the physical co-location of companies within ecosystems but also on developing strong institutional relationships and deep social ties among the involved actors.

Furthermore, the importance of promoting social entrepreneurship within ecosystems is clearly evident (Thompson et al., 2018). The research suggests that social and environmental goals can be crucial drivers for ecosystem development, alongside traditional financial objectives. Managers can draw inspiration from the B Corp movement, which emphasizes balancing profit with social and environmental impact, to embed sustainability into their ecosystem strategies (Volkman et al., 2021). Additionally, the study underscores the significance of fostering collaboration and goal-sharing among ecosystem actors. By articulating a clear vision and mission, aligning stakeholders around common objectives, and cultivating a culture of trust and mutual understanding, managers can create an environment conducive to collaborative (Annrsi and Cucino, 2023) and regenerative (Cucino, 2023) innovation within ecosystems. Moreover, the research advocates for adopting a dynamic approach to ecosystem development, considering network evolution over time. Managers should continuously assess and adapt their strategies in response to changing dynamics (Chesbrough, 2020; Cucino et al., 2024), leveraging insights from network analysis to identify emerging opportunities and challenges.

Overall, the findings highlight the multifaceted nature of entrepreneurial ecosystems and the importance of nurturing diverse forms of proximity, collaboration, and sustainability to drive ecosystem development and create lasting value for all stakeholders involved. Managers can leverage these insights to cultivate thriving and resilient ecosystems that contribute to economic growth, social welfare, and environmental sustainability.

Overall, the findings highlight the multifaceted nature of entrepreneurial ecosystems and the importance of cultivating different forms of proximity, collaboration and sustainability to drive ecosystem development and create lasting value for all stakeholders involved. Managers can leverage this information to cultivate thriving, resilient ecosystems that contribute not only to resilient business growth (Cucino et al., 2022; Mason & Brown, 2014); but also to community economic growth, social well-being, and environmental sustainability.

Originality of the paper. In conclusion, this study aims to examine the interconnection of various dimensions of proximity in the development of entrepreneurship ecosystems. Through a comprehensive analysis of the relationships between geographical, institutional, and other forms of proximity, the aim is to better understand how these factors influence the creation and growth of entrepreneurship ecosystems. Additionally, by studying the BCorp movement, the goal is to contribute to the debate on sustainability in entrepreneurship ecosystems and provide a new perspective on the interaction between sustainability and entrepreneurship. To date, few studies have analyzed goal-sharing (Theodoraki, 2018) as a relevant proximity in the development of entrepreneurship ecosystems. Moreover, to our knowledge, there are no studies that have analyzed the BCorp movement through the lens of the Entrepreneurship Ecosystem. Despite the limitations and possible future directions, it is hoped that this work can provide a significant contribution to the understanding and development of sustainable entrepreneurship ecosystems.

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Purpose-driven Clusters in the Era of Sustainability

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Abstract

Despite the growing body of empirical evidence, theoretical research on the role of industrial clusters in sustainable development remains limited. Existing studies often apply recent cluster literature to interpret real-world cases, providing only partial insights. This paper seeks to fill this gap by addressing the conversation on cluster dynamics to comprehensively understand both their potentialities and limitations in fostering sustainable development. Our paper focuses on the theoretical aspects of clusters within the context of the sustainable economy, representing a novel contribution to the literature. While prior research has primarily examined standard industrial configurations to explore the effects of agglomeration, our study aims to delve deeper into purpose-driven clusters. These clusters exhibit an overarching commitment not limited to industrial and economic interests but extended to preserving and protecting the environment in which they operate. Specifically, we increasingly observe cases of purpose-driven clusters involved in protecting natural resources. By offering a theoretical framework for understanding clusters within the context of sustainability, this research aims to advance scholarly discourse, advancing some theoretical propositions on purpose-driven clusters and suggesting some directions for policy decisions in pursuing a more sustainable future.

Keywords: cluster; purpose; sustainability; natural resources protection

Framing of the research. Sustainable challenges, as well as the diffusion of new and transversal technologies, are changing the industrial configurations of firms. In particular, the increasing sustainable challenges require the involvement of several firms and actors from different economic activities, pushing firms toward new forms of agglomeration to disseminate and implement sustainable development initiatives. These new configurations of actors are coalescing around inspiring aims, more precisely, around a common purpose that enhances their commitment to the environment (e.g., natural ecosystems) and society in which they operate, rather than solely prioritizing the profitability of cluster's actors (Hollensbe et al., 2014). Some academics draw upon cluster theory to propose ideal collective initiatives for promoting sustainable development (Lis and Radzio, 2023; Baldassare et al., 2019; Berkowitz, 2018; Ratten, 2018). Recently, there has been growing interest in the link between sustainable goals and clusters in academia (Derlukiewicz et al., 2020; Glinskiy et al., 2016). Clusters, intended as collective actors working with decision-makers to exploit and co-create regional advantages, can elevate specific ideas related to sustainable development to higher levels of diffusion (Hervás-Oliver, 2021). This cooperation is highly effective in coordinating joint efforts to implement changes (Bailey et al., 2018). The European expert group on clusters (2021) has affirmed that clusters have the potential to accelerate the twin green and digital transition, build resilience, and boost recovery. For instance, terms like blue economy, space economy, bioeconomy, or, more recently, forest economy (World Economic Forum, 2022) are spreading and entering our everyday language. These terms identify clusters composed of private and public actors engaged in different economic activities but who share a purpose: promoting responsible and innovative use of natural resources (Qui et al., 2024). The overarching goal of such clusters is to protect and preserve natural resources while promoting the adoption of sustainable practices and strategies that strike a balance between economic prosperity and ecological resilience. The pursuit of sustainable development is undoubtedly challenging. While clusters possess the capacity to influence firms' strategic objectives, foster social trust and acceptance, introduce and diffuse innovative activities, and enhance knowledge transfer, their effectiveness is not universal. The success of clusters hinges on a complex interplay of firm-specific and contextual factors. Moreover, the endeavor for sustainable development introduces new and intricate challenges that even configurations seemingly aligned with sustainability goals struggle to address. According to Nilson, Griggs, and Visbeck (2016) there are three primary challenges linked to sustainable goals: collective actions among different industries and different levels of action, complex compromise among different firms' aims, and, in general, among economic and sustainable aims; long-lasting mechanisms of coordination and action implementation. Additionally, Bennich et al. (2021) state that sustainability initiatives and agendas are not always coherent. While they

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promote virtuous changes, they inhibit or nullify respective visions and goals. More precisely, these new cluster configurations represent an agglomeration of industries that, to address contemporary sustainability issues efficiently, require more attention in two key areas: firstly, designing shareable strategies, and secondly, mitigating negative interactions by seeking trade-offs that maximize positive interactions (Bowen et al., 2017; Nilsson et al., 2018). For instance, in the case of the blue economy cluster, the aim is to preserve natural water resources. This purpose entails collaboration and convergence among maritime, energy, and tourism companies to reduce water pollution, minimize water wastage, preserve water wildlife, regulate the use of water-related sources of food, and address the unequal distribution of this vital resource (Shi et al., 2020; EU, 2021). These industries have different or overlapping sustainable goals, necessitating the complex negotiation of private and shared interests and priorities.

In the study of the bioeconomy, Bennich et al. (2021) have demonstrated that achieving theoretical sustainable objectives, such as those outlined in the 2030 agenda, is challenging in practice. Through quantitative analysis and simulation, they have revealed the difficulty in maintaining high levels of production efficiency while protecting biological resources. Therefore, alongside new coordination mechanisms, innovative solutions and processes are required to introduce disruptive ideas that enable a better balance between economic and sustainable goals.

Cluster theory has shown the potential of clusters in introducing and diffusing innovation (Huang and Wang, 2018). These findings provide additional evidence for scholars to consider clusters as a critical solution for sustainability. Qui et al. (2024) argue that clusters can promote the efficient use of resources through the innovative environment they create, thereby accelerating progress toward sustainability.

Despite this evidence and the validation by key institutional actors (e.g., the European Union), the advantages of clusters, as well as their innovation dynamics, should be carefully generalized and adapted to the context of this new cluster form in the era of sustainability, which we call purpose-driven clusters. Therefore, a more accurate analysis of cluster theory and a revision of theoretical assumptions are required, considering that in this new configuration of clusters, actors are aggregated around a joint and honorable purpose designed beyond the firms' mission statements but for the betterment of society.

Purpose of the paper. Hence, this trend, widely adopted by public actors (national, regional, local, and city governments) and associations or meta-organizations to promote sustainable and productive territorial strategies, demonstrates how the concept of clusters, though criticized by many theorists, may represent a valid solution for addressing sustainable challenges. However, such a critical role attributed to clusters re-opens a discussion on the topic. It reintroduces several unresolved issues related to cluster conceptualization, previously proposed by Martin and Sunley (2003). These include the level of industrial aggregation or the scope of industrial association and activities that could be included in a cluster, the lack of clear boundaries (both industrial and geographic), the strength of links, economic specialization, and the level of action in clustering processes (e.g., interfirm linkages, knowledge spillover, rivalry, and business and social networks).

Recent literature linking sustainability and clusters appears to reintroduce a consolidated concept without adapting it to the contextual application (Alberti and Belfanti, 2019), neglecting crucial aspects of sustainable challenges that may require the enrichment of cluster theory. We propose including sustainable clusters within a broader category of 'purpose-driven clusters' and accordingly reconsidering three fundamental dynamics inspired by Martin and Sunley's (2006) framework: aggregation rationale, proximity and boundaries, and strength of ties. The derived argumentation provides a critical review of purpose-driven cluster characteristics, proposing a set of propositions to explore for advancing research in this field.

Methodology. The paper proposes a theoretical framework based on the literature on industrial clusters to identify new theoretical propositions on clusters driven by sustainability purposes. Although the theory of clusters is well-established, it must be adapted to fully capture the peculiarities and dynamics of clusters that address current global needs in an era of sustainability. Recognizing that theory is an "abstraction and a simplification of reality" (Makadok, Burton, and Barney, 2018), we seek to identify salient aspects of cluster configurations that require revision or discussion for better practical application.

Our theory-building process follows Makadok, Burton, and Barney's (2018) framework, which introduces five levers of theorizing: modes of theorizing, levels of analysis or phenomena, causal mechanisms, constructs and variables, and boundary conditions. We focus on the blue economy, space economy, and bioeconomy. Adopting the same level of analysis of existing theories, we question the validity of traditional economic causal mechanisms such as agglomeration, knowledge transfer, cooperation, and innovation in light of shared sustainability purposes. Accordingly, we redefine, clarify, and broaden the cluster construct by discussing its most relevant dimensions of analysis: aggregation reason, proximity and boundaries, and ties.

Preliminary Results. In this ongoing and abbreviated version of the paper, we outline the critical aspects of the theoretical progression that lead to framing the concept of purpose-driven clusters. Clusters refer to a geographic concentration of interconnected firms collaborating to create a competitive advantage for themselves and the economy in which they operate (Porter, 1990). The concept of local concentration was initially introduced by Marshall (1980, 1920) with the notion of industry clusters and industrial districts, emphasizing the interconnection of economic activities, known as economic linkages. However, the success of Silicon Valley (Saxenian, 1994) and the academic significance of Porter's seminal work on "The Competitive Advantage of Nations" (1990) revitalized the concept of agglomeration among economic geographers, sociologists, and innovation economists, introducing a socio-cultural dimension.

Subsequently, this resurgence led to a proliferation of works and interpretations of clusters, resulting in theoretical and empirical confusion across various economic disciplines analyzing the phenomenon (Martin and Sunley, 2003;

Maskell and Kebir, 2006; Maskell and Malmberg, 2007). Although the cluster concept was operationalized differently, two core elements have remained central in most cluster definitions: the presence of related activities and the proximity (not necessarily geographical) of interconnected individuals and organizations (Catini et al., 2015).

The literature derives various benefits and advantages from these critical elements, assessed through empirical evidence. Some of these benefits can be traced back to Marshall's theories, wherein spatial and process adjacencies contribute to agglomeration economies. These economies, resulting from better access to skilled labor, specialized suppliers, and knowledge spillovers, lead to enhanced knowledge sharing, cost sharing and minimization, scope and scale economies, mutual trust, and virtuous competition (Marshall, 1920). Additionally, apart from internal benefits, agglomeration also extends positive effects at the societal level by increasing productivity, economic growth, and innovation within the local area where the cluster operates (Porter, 1990).

Although core elements and many of these benefits have been widely evidenced in different configurations of clusters (e.g., industrial clusters, regional clusters), the following results highlight the need for adaptations when clusters are proposed as a solution to pursue sustainable development, particularly in configurations driven by purpose, where different firms are required to collaborate not for optimizing economic goals, but for interests of future generation such as for the natural resource protection.

As Martin and Sunley (2003) outlined, the level of industrial aggregation and the range of industrial relationships and activities included in a cluster have evolved over time, shifting from product/process aggregation to geographic location. In the era of sustainability, the reason for aggregation undergoes further variation: following a common purpose based on the protection of a shared resource. Current cluster configurations center around a specific and shared natural resource, such as water, soil, or space. Such a broad level of aggregation results in the inclusion of heterogeneous actors from diverse industries or clusters.

Therefore, we develop the following proposition:

P1. In a purpose-driven cluster, actors are heterogeneous in nature and specialization but share a common positive intent toward society.

Indeed, since the beginning, the cluster concept has described links among entities with different characteristics in terms of industries and types of actors (corporations, associations, institutions), but with a more precise individual aim focused on a specific activity for the creation and distribution of a final product or service in a particular area. In contrast, in a natural resource-based cluster, the overall purpose is much more explicit than the individual purpose. In other words, the general goal of "resource protection" is more evident than what each firm in the cluster should do concretely to reach the common purpose.

Consequently, the greater the number of involved actors, the more pronounced the lack of clear industrial and geographic boundaries. The proximity element requires specific argumentation to identify boundaries and belonging to the cluster. Referring to the five dimensions of proximity proposed by Boschma (2004) - geographical, cognitive, social, organizational, and institutional proximity - we argue that in a resource-based cluster:

a) Geographical proximity regains attention but is related to the location of the natural resources to be protected rather than to the location of other cluster's firms. For example, all international shipping companies, even those not based in the Mediterranean, are included in protecting the Mediterranean Sea.

b) Cognitive proximity, intended as the similarity of competencies and technologies, risks being reduced and dispersed due to the variety of actors involved. Therefore, it is helpful to leverage cognitive proximity to sustainable objectives.

c) Organizational proximity becomes more relevant due to the necessity of work division not only based on firm specialization but also on firms' linkage with the sustainable problems to solve and the sustainable actions needed, aiming to avoid overlapping and frictions.

d) Social proximity is less characteristic, as stable relationships require dynamics and openness to avoid compromising sustainable transactions.

e) Institutional proximity maintains its relevance but increases in complexity due to the alignment of norms among multiple industries and resources.

Therefore, we develop the following propositions:

P2. In a purpose-driven cluster, boundaries are blurred and extensive. The geographical identification of actors involved is associated with the localization of natural resources.

P3. In a purpose-driven cluster, cognitive proximity is measured considering similarities in sustainable objectives.

P4. In a purpose-driven cluster, organizational proximity is associated with the commonality of problems to solve and the required action.

P5. In a purpose-driven cluster, social proximity exhibits instability and dynamism.

P6. In a purpose-driven cluster, the institutional proximity is weak and associated with heterogeneity of norms.

The variety of links required to achieve sustainable development goals across industries also affects the strength of ties that have been useful in cluster evidence thus far. The lack of necessary localization, as well as the mix of companies and industries, suggests a lack of strong ties (Pablo-Martí and Arauzo-Carod, 2020) or the dispersion of strong ties, leading to the proliferation of weak ties and producing a mix of consequences on knowledge transfer and innovation (Huang and Wang, 2018). However, unlike the traditional view of clusters, where cluster activities are driven by small

but influential groups of actors with strong ties, in a resource-based cluster, activities are carried out by multiple groups with separate strong ties.

Furthermore, unlike Huang and Wang (2018), who illustrated the evolution over time between weak and strong ties in industrial clusters considering trust and knowledge complexity, we hypothesize a less linear relationship among different types of ties. This nonlinearity may result from the incidence and necessity to address multiple (and not simply aligned) sustainable aims. In other words, the network geometry will be variable (a mix of strong and weak ties) and switch between weak and strong relationships and vice versa. Revising ties' purpose, boundaries, and strengths has consequences in explaining coordination mechanisms among entities, conflicts and solutions, knowledge transfer, and innovation.

Contrasting yet virtuous dynamics can be observed by focusing on knowledge and innovation. The negative aspects include the presence of forced weak ties, which are firm connections mandated by norms and regulations that may not easily lead to explorative knowledge and radical innovation, as well as strong and inhibitory ties resulting from existing long-term relations that could hinder disruptive changes, favoring incremental and continuous solutions over radical ones. On the positive side, the heterogeneity of actors favors the variety of ties and the emergence of recurring weak relationships, which could facilitate the emergence of iterative innovation.

These theoretical arguments lead us to develop the seventh proposition:

P7. In a purpose-driven cluster, a spectrum of strong and weak ties exists, with non-linear relationships, fostering the emergence of iterative innovation.

Table 1 sum-up preliminary results and propositions.

Table 1. Characteristics and proposition of purpose-driven cluster

Cluster elements	Characteristics	Proposition
Aggregation Reason	Overarching and common purpose for benefiting the natural environment and society	P1. In a purpose-driven cluster, actors are heterogeneous in nature and specialization but share a common positive intent toward society.
Boundaries and Proximity	<p>Boundaries</p> <p>Spread and blurred boundaries</p> <p>Proximity</p> <p>-Geography of resources</p> <p>-Cognitive proximity of sustainable objectives</p> <p>-Organizational proximity based on problems and action, not only on specialization</p> <p>-Dynamic and open social proximity</p> <p>-Institutional proximity among industries and resources</p>	<p>P2. In a purpose-driven cluster, boundaries are blurred and extensive. The geographical identification of actors involved is associated with the localization of natural resources.</p> <p>P3. In a purpose-driven cluster, cognitive proximity is measured considering similarities in sustainable objectives.</p> <p>P4. In a purpose-driven cluster, organizational proximity is associated with the commonality of problems to solve and the required action.</p> <p>P5. In a purpose-driven cluster, social proximity exhibits instability and dynamism.</p> <p>P6. In a purpose-driven cluster, the institutional proximity is weak and associated with heterogeneity of norms.</p>
Ties (strong vs weak)	<p>Ties varieties: strong and weak</p> <p>Nonlinear relationship among weak and strong ties, based on incidence and necessity</p>	P7. In a purpose-driven cluster, there are various strong and weak ties, with non-linear relationships that favor the rise of recurring innovation.

Research limitations. Still in progress, the paper delves into theoretical discussions on clusters and sustainability, specifically focusing on a cluster configuration aimed at preserving a natural resource. These configurations represent a common form of agglomeration driven by a shared purpose, which we label "Purpose-driven Clusters." Some forms of clusters for sustainability have already been addressed in the literature, particularly those of eco-industrial clusters, which are excluded from our discussion as they align more with the traditional description of industrial clusters, focusing on industrial processes rather than a common and shared purpose. However, although the paper adopts an inductive approach, it lacks a detailed description of empirical evidence derived from observable dynamics in blue, bio, and space economies. Additionally, by focusing solely on three cluster elements, the paper overlooks other aspects that may warrant attention, such as governance mechanisms and interfirm conflict resolution. Finally, a better integration of existing sustainable development theories could enhance cluster analysis's theoretical underpinnings and help identify theoretical assumptions for best practices.

Managerial implications. The theoretical adaptation of the concept of industrial clusters in the era of sustainability brings forth several implications. The new conceptualization may assist firms and policymakers in becoming more aware of which aspects to leverage to initiate a sustainable transition. Policymakers are encouraged to adopt a less deterministic and superficial approach when designing top-down cluster configurations and, instead, to consider the complexity of challenges that will arise during cluster performance. Firms are urged to be more receptive to a new idea of aggregation that prioritizes the preservation of the planet even above their interests.

Originality of the paper. Despite the increasing availability of several empirical examples, theoretical research that might contribute to theorizing on the topic is mainly missing (Alberti and Belfanti, 2019). Scholars often rely on applying

more recent literature on clusters to interpret current cases in the “real” environment, offering only partial explanations. The paper aims to re-open a conversation on cluster dynamics to understand characteristics, potentialities, and the existing limitations that make a cluster configuration a key factor for sustainable development. The originality of this paper lies in its focus on theoretical aspects of clusters within the context of the sustainable economy. Existing literature typically examines standard industrial configurations to investigate the effects of this virtuous agglomeration. In contrast, this paper delves into understanding the specific nature of their functioning, introducing a new form of aggregation labeled “Purpose-driven Cluster”.

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The Power of Interactions. Exploring Stakeholder Adoption of pro-social practices from purpose-driven companies

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Abstract

The management literature has recently focused on reimagining capitalism through the lens of corporate purpose. Although many scholars have theoretically conceptualised this discourse and its connection to stakeholder theory, empirical studies are needed to further contribute to this ongoing debate. As society demands greater responsibility and ethical conduct, understanding stakeholder engagement with purpose-driven companies is crucial. This qualitative research aims to explore the complex relationship between purpose-driven companies and their stakeholders. The study focuses on understanding the various factors that influence stakeholder adoption of pro-social practices promoted by purpose-driven companies and the interaction mechanisms through which this adoption takes place. We are obtaining these insights from an extensive data collection that included 30 semi-structured interviews with key stakeholders, three participant observations, and a meticulous analysis of secondary data, such as organizational documents, industry reports, and existing literature. The preliminary findings of our study shed light on several key factors and ways that characterize the adoption of pro-social practices by stakeholders. These factors include organizational culture, leadership support, communication strategies, and the perceived alignment with stakeholder values. Our research highlights also the importance of fostering collaborative relationships between purpose-driven through both formal and informal interaction mechanisms. Formal mechanisms include structured stakeholder engagement processes; on the other hand, formal mechanisms involve structured interactions, which establish clear expectations and obligations between companies and stakeholders. We aim to contribute to both theoretical advancement and practical implications for stakeholder theory and the literature on corporate purpose. Our analysis aims to reveal how purpose-driven companies can engage with stakeholders to achieve shared purposes and create positive social change. Purpose-driven companies can contribute to the common good by fostering transparency, accountability, and trust. Ongoing dialogue and collaboration between companies and their stakeholders are necessary to ensure alignment with evolving societal expectations and values. Ultimately, fostering a mutual relationship between purpose-driven companies and their stakeholders can pave the way for the adoption of pro-social practices and driving positive societal impact.

Keywords: purpose-driven companies; stakeholders engagement; interaction mechanisms; pro-social practices

Framing of the research. *In recent decades, there has been a significant shift in the business landscape. Many companies have moved away from prioritising shareholders and have instead adopted pro-social practices that cater to the needs of all stakeholders (Battilana et al., 2022). This shift from the traditional shareholder-centric model to a stakeholder-centric one has been crucial in fostering a more inclusive, fair, and sustainable approach to growth (Mayer, 2021). The stakeholder approach highlights the significance of considering the interests of all groups involved (Freeman et al., 2020). It provides valuable insights into the role of companies in supporting the holistic experiences of stakeholders (McGahan, 2023), contributing to their flourishing (von Ahnen and Gauch, 2021). Companies can effectively engage stakeholders in their needs and expectancies by aligning their goals with a shared purpose that promote value creation and equitable distribution of resources (McGahan, 2023). In this context, the shift towards a stakeholder-centric approach has significant implications for corporate purpose, as it directly impacts stakeholder involvement and engagement (George et al., 2023; Harrison et al., 2023). As such, purpose-driven companies do have unique characteristics that distinguish them in the business landscape. They are companies that prioritize long-term sustainability over short-term profits, acknowledge the interdependence between profit and pro-social purpose (Henderson, 2021). Accordingly, purpose-driven practices emphasise the importance of aligning organisational goals with broader societal values and aspirations, promoting positive change and sustainable development for all stakeholders (Freeman et al., 2020). Indeed, many companies are publicly declaring purpose statements that attest their commitment to creating a positive impact beyond financial returns (e.g. Mayer, 2016). These statements guide decision-making and strategic direction (Almandoz, 2023). Purpose-driven companies also promote accountability and transparency by*

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measuring and reporting their social and environmental performance to stakeholders (Stroehle et al., 2019). This effort to guarantee transparency not only fosters trust with stakeholders but also encourages ongoing improvement and innovation in pursuit of purpose-driven objectives (Henderson, 2021). Purpose-driven companies often show higher levels of innovation and creativity as they are motivated by a desire to solve pressing societal issues and create “architectural” change (Henderson, 2021). As companies adopt a purpose-driven approach, it is crucial to acknowledge the broader context in which they operate, exploring their interactions with stakeholders (Gulati and Wohlgezogen, 2023). Building stronger and more resilient organizations that are better equipped to navigate complex challenges and seize new opportunities by acknowledging and addressing the needs and concerns of stakeholders (Florez-Jimenez et al., 2024), but also act proactively to push for the change, they have the potentiality to become agents of change (Almandoz, 2023).

Purpose of the paper. Corporate purpose is essential for promoting the well-being of stakeholders, both within and outside of companies (Freeman et al., 2020). Accordingly, George et al. (2023) stated that “Purpose in the for-profit firm captures the essence of an organization’s existence by explaining what value it seeks to create for its stakeholders. In doing so, purpose provides a clear definition of the firm’s intent, creates the ability for stakeholders to identify with, and be inspired by, the firm’s mission, vision, and values, and establishes actionable pathways and an aspirational outcome for the firm’s actions” (p. 1848). The stakeholder approach provides useful insights into the role of companies in promoting comprehensive stakeholder experiences, based on the pursuit of shared goals for value creation and distribution (McGahan, 2023). As von Ahsen and Gauch (2021) emphasise, it is essential to design a long-term purpose and communicate it regularly to stakeholders. This development has enabled a deeper exploration of purpose, which is attentive to broader groups of stakeholders rather than solely from the maximization of the profit of the companies (Harrison et al., 2020). As a result, purpose-driven companies act as enablers in promoting the common good of stakeholders (Almandoz, 2023; Frémeaux and Michelson, 2017), collaborating to manage stakeholder engagement (Kaplan, 2023). The achievement of corporate purpose is a collective effort that involves both internal and external stakeholders in a dynamic and mutually beneficial relationship (Rindova and Martins, 2023). This dynamic nature is expected to significantly impact the company’s relationships with its stakeholders, promoting new interaction mechanisms to guide their engagement with the company towards a shared purpose that go beyond profitability (Bacq and Aguilera, 2022; Rindova and Martins, 2023). In addition to shaping the company’s purpose, the collaborative formulation process fosters a sense of ownership and commitment among stakeholders. This leads to deeper alignment with the organization’s mission and values (George et al., 2023). Furthermore, by integrating diverse perspectives and insights from stakeholders, the company can develop more holistic and inclusive strategies that address a wide range of societal and environmental concerns (Almandoz, 2023; Mayer, 2016; Mayer, 2021). This approach enhances stakeholder engagement and strengthens the company’s resilience and adaptability in navigating complex and rapidly evolving business landscapes (Florez-Jimenez et al., 2024). Since purpose encompasses not only objectives, goals, and tasks of companies but also moral, ethical, and value-driven directions (George et al., 2023; McGahan, 2023; Almandoz, 2023), it can foster multistakeholder action (Gulati and Wohlgezogen, 2023) and orchestrated change (Henderson, 2021). However, navigating purpose dynamics presents a significant challenge for companies, prompting ongoing debates about effective interaction mechanisms (von Ahsen and Gauch, 2021). This highlights the need for further research to investigate how stakeholders engage and interact with organizations (McGahan, 2023). Addressing this critical gap, our research aims to explore the relationship between purpose-driven companies and their stakeholders. The aim of this research is to explore the feasibility of stakeholders adopting pro-social practices from the interaction with purpose-driven companies. Additionally, we aim to elucidate the dynamics of enablers and barriers that shape this adoption as interaction mechanisms. By shedding light on these dynamics, our research aims to contribute to a deeper understanding of stakeholders engagement with purpose-driven organizations and inform strategies for enhancing the effectiveness of pro-social practices within and beyond companies’ boundaries.

Methodology. We are investigating the adoption of pro-social practices by stakeholders within purpose-driven companies using a grounded theory approach (Glaser and Strauss, 1967). Grounded theory facilitates the generation of theoretical insights from empirical data, allowing for an inductive and iterative analysis process (Glaser and Strauss, 1967). This methodology enables us to generate theoretical insights from empirical data, enabling an inductive and iterative analysis process. The grounded theory approach is well-suited for exploring complex and dynamic phenomena, such as the interactions between purpose-driven companies and their stakeholders. Our research design integrates both primary and secondary data sources to obtain a comprehensive understanding of the phenomenon under investigation (Jonsen and Jehn, 2009).

Research setting

Our identification of Italian purpose-driven companies relies on the application of the following screening criteria. First, the presence of a corporate purpose statement on the official website, which must include at least one of the following terms: purpose, (ultimate) goal, guiding principle, or objective beyond profit related to social concerns. Second, the explicit allocation of resources and investments to the achievement of the corporate purpose, in accordance with the principles outlined by the British Academy (2019, p. 895). Third, the possession of a B-Corp certification. Companies meeting a minimum of two out of three of those criteria underwent two validation tests. Initially, a focus group was conducted prior to data collection, involving three independent academic experts specializing in “purpose”. This step ensured the accuracy of our selection and validated our research and interview protocols. During the focus group, eight potential purpose-driven companies were identified. Subsequently, we selected only those companies that scored a minimum of 15 in a preliminary self-evaluation directed to CEOs, based on the 7-point Likert scale developed by Bhattacharya et al. (2022). This process resulted in the selection of three purpose-driven companies with a relatively

long life (minimum 10 years) and a relatively large size (more than 250 employees). Starting from these three purpose-driven companies, we are selecting randomly a certain number of internal managers and external managers from supplier and customer groups.

Data collection

Primary data collection is involving 30 semi-structured interviews with key stakeholders, including managers, and external suppliers and customers allowing for rich insights into their perceptions, experiences, and behaviours related to pro-social practices. We are collecting data of two main group of interviews through two different interview protocols respectively: managers of the purpose-driven company, and managers of the stakeholders' companies among suppliers and customers groups. Our primary data consist of preliminary meetings, semi-structured individual interviews lasting 45 minutes on average, follow-up mails. Additionally, we conducted three participant observations at each of the three purpose-driven companies' sites to gather further insights. Participant observations are crucial for gaining firsthand insights into the daily operations and interactions within purpose-driven companies' environments. Additionally, secondary data from existing literature, industry reports, and organizational documents are utilized to contextualize and enrich our findings, enabling triangulation and validation of emergent themes (Glaser and Strauss, 1967; Jonsen and Jehn, 2009).

Data analysis

Firstly, open coding involves breaking down data into discrete units to identify initial concepts and categories. Subsequently, axial coding facilitates the exploration of relationships between these concepts, enabling the emergence of higher-order themes and theoretical constructs. We are developing a framework that encapsulates the complex interactions between purpose-driven companies and their stakeholders, organizational practices, and contextual influences. Triangulation techniques are being employed to compare findings across different data sources and ensure the validity and reliability of our interpretations.

Results. The aim of the data analysis is to identify key findings on the adoption of pro-social practices by internal and external stakeholders of purpose-driven companies. The analysis will identify varying levels of awareness and understanding among stakeholders regarding the pro-social practices implemented by their respective companies, which may influence the degree of engagement and commitment towards these initiatives. It is expected to identify factors which facilitate or hinder stakeholders' adoption of pro-social practices, such as organizational culture, leadership support, and perceived benefits, will emerge. Additionally, adoption patterns are likely to vary among different stakeholder groups, with employees, customers, and suppliers displaying differing levels of involvement and receptiveness. This study will examine the impact of leadership support on stakeholder engagement and adoption of pro-social practices. Effective leadership can significantly influence organizational culture and enhance stakeholder trust and commitment by championing purpose-driven initiatives and advocating for stakeholder interests. Contextual factors, such as industry dynamics and market conditions, are expected to significantly influence stakeholder perceptions and behaviours towards the diffusion of pro-social practices. Moreover, this study aims to investigate the potential impact of external factors, such as regulatory frameworks and industry standards, but also voluntary certifications (e.g. B-Corps) on stakeholders' attitudes and behaviours towards adopting pro-social practices. By examining how external factors interact with internal dynamics within purpose-driven companies and external interaction mechanisms with stakeholders, valuable insights can be gained into the broader context in which these organizations operate and the challenges they face in driving meaningful societal impact. Furthermore, we aim to explore the enduring consequences of stakeholder involvement with purpose-driven enterprises, including its impact on brand image, customer retention, and financial outcomes. Through an examination of the outcomes of sustained stakeholder engagement initiatives, we aim to uncover best practices and lessons learned. This will inform future strategies for enhancing the effectiveness of pro-social practices adoption and maximizing the positive impact of purpose-driven companies on society. Our research aims to investigate also what are the mechanisms of interaction between purpose-driven companies and their stakeholders. We expect to identify both formal and informal mechanisms activated by purpose-driven companies to diffuse pro-social practices among their internal and external stakeholders. Formal mechanisms include structured stakeholder engagement processes, such as advisory boards, regular meetings, and formal feedback mechanisms. These provide structured channels for stakeholders to voice their concerns and contribute to decision-making processes and strategic alliances around a shared purpose. On the other hand, formal mechanisms involve structured interactions, such as contracts, agreements, and policies, which establish clear expectations and obligations between companies and stakeholders. Informal mechanisms, on the other hand, involve spontaneous interactions, such as social events, networking opportunities, and informal discussions, which facilitate relationship-building and trust-building between companies and stakeholders on a more personal (and authentic) level. Understanding both formal and informal interaction mechanisms can provide insights into the dynamics of stakeholder engagement. This can help to identify the factors that influence the effectiveness of these interactions in promoting the adoption of pro-social practices and driving positive societal impact.

Research limitations. The research relies on qualitative data obtained through interviews and secondary sources, which may be subject to researcher bias and interpretation. Efforts are being made to mitigate bias through triangulation and member checking. Furthermore, it is important to consider that the sample size and selection criteria for stakeholders could have impacted the range and depth of insights gathered, potentially resulting in the exclusion of perspectives from specific stakeholder groups or organizational contexts. Additionally, the qualitative nature of the research allows for a rich exploration of stakeholder perspectives and experiences, providing valuable insights into the complexities of

stakeholder engagement with purpose-driven companies. Despite efforts to ensure rigor and validity, it is essential to acknowledge the inherent subjectivity in qualitative research, which may influence the interpretation of findings.

Managerial implications. The aim of our research is to provide practical recommendations for purpose-driven companies seeking to strengthen their relationships with stakeholders and increase their social and environmental impact through a comprehensive analysis of these mechanisms. The findings of this research could have significant implications for managers and organisational leaders who aim to enhance stakeholder engagement and adoption of pro-social practices within and beyond purpose-driven companies. We expect to identify best practices and lesson learned to foster the diffusion of pro-social practices in the context of the purpose-driven companies. For instance, to effectively tailor communication and engagement strategies, it is crucial to understand stakeholders' varying levels of awareness and perception; or even more, emphasise shared values and benefits for all stakeholders can enable the diffusion effect. Additionally, creating a supportive organisational culture and securing leadership commitment are essential for fostering an environment conducive to stakeholder participation and buy-in. Demonstrating commitment to social responsibility and sustainability can increase trust and confidence among stakeholders, motivating them to actively support and contribute to the company's purpose-driven goals. Managers must recognise the diverse needs and expectancies of different stakeholder groups and tailor engagement strategies accordingly and our research might help to recognise the best practices to achieve this goal. By comprehending and addressing the concerns and motivations of each stakeholder group, managers can develop stronger relationships and encourage a sense of shared ownership in a shared purpose. Additionally, managers must continuously monitor and evaluate their stakeholder engagement efforts. To ensure ongoing alignment and balance with stakeholder expectations and organizational goals, managers should solicit feedback and adapt their strategies as needed. We expect that our participant observations are crucial in this process as they provide firsthand insights into stakeholder interactions and behaviours, enabling managers to make informed decisions and adjustments to their engagement strategies. Overall, our research empirically explore how purpose-driven companies can cultivate more meaningful and impactful relationships with their stakeholders. So, it can recognise managerial implications also for stakeholder companies, both suppliers and customers, helping them to recognise the mechanisms for the diffusion of pro-social practices activated by purpose-driven companies.

Originality of the paper. This research offers several original contributions to the existing literature on purpose-driven companies and stakeholder theory (Bartlett and Ghoshal, 1994; Mayer, 2021; Bhattacharya et al., 2022; Zenger, 2023). Firstly, by focusing on the relationship between purpose-driven companies as agents of change for their stakeholders, we are addressing a significant gap in the literature, which has predominantly focused on purpose as a response to external pressures and expectancies. Our research uniquely provides a comprehensive understanding of how purpose-driven initiatives influence stakeholder adoption of pro-social practices as agents of change. Furthermore, our research goes beyond merely examining the existence of purpose-driven initiatives within companies to delve into the dynamics of stakeholder adoption outside companies' boundaries. By exploring enablers and barriers that shape stakeholder engagement with purpose-driven companies, we offer valuable insights into the interaction mechanisms underlying their relationships. Additionally, our research adopts an empirical approach, allowing for in-depth exploration and contextualization of purpose-driven companies phenomenon of inquiry. This empirical foundation enhances the credibility and applicability of our findings, contributing to a more nuanced understanding of the role of purpose-driven companies in driving positive social change and promoting societal well-being.

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B-Corp: un esame delle aziende alimentari Italiane attraverso la Teoria dei Segnali

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Abstract

Le nuove normative europee sulla responsabilità sociale delle imprese private impongono una maggiore assunzione di responsabilità nei confronti dell'ambiente e della società. La CSR-D e la CSDD-D ampliano le imprese soggette alla rendicontazione di sostenibilità e richiamano l'adozione di azioni concrete per la sostenibilità e il rispetto dei diritti umani. Questo scenario ha spinto molte imprese a cercare la certificazione B-Corp per trasformarsi in entità più sostenibili. Attraverso la Teoria dei Segnali, l'articolo proposto analizza la comunicazione delle imprese B-Corp rispetto alle implicazioni manageriali derivanti da tale certificazione. La comunicazione analizzata è quella rivolta al pubblico più ampio di stakeholder, ovvero quelli raggiunti attraverso i social media. Le ricercatrici, attraverso la Teoria dei Segnali valutano la coerenza tra ciò che le imprese comunicano e ciò che la certificazione implica. I risultati indicano che solo una piccola percentuale dei post si concentra sullo status B-Corp e che alcune dimensioni importanti, come le metriche di governance, sono trascurate. Questo solleva l'importanza della consapevolezza interna e della selezione dei fornitori di servizi di comunicazione per garantire una comunicazione completa e accurata riguardo alla certificazione B-Corp. Altra dimensione rilevata è infine quella della consapevolezza e dell'interesse dello stakeholder nei confronti di questo tipo di informazioni.

Key words: *b-corp; Teoria dei Segnali; communication; sustainability; transition; food*

Contesto della ricerca. *Le nuove normative europee sulla responsabilità sociale del settore privato stanno aumentando le responsabilità che le imprese dovrebbero prendersi (e che dovrebbero poi rendicontare e comunicare) nei confronti dell'ambiente e della società. In particolare modo, la CSR-D, quale Corporate Sustainability Reporting Directive, da un lato dal 2022 ha allargato la compagine di imprese sotto obbligo di rendicontazione di sostenibilità. Dall'altro lato, la CSDD-D, quale Corporate Sustainability Due Diligence Directive, richiama la necessità di avviare piani e azioni concrete e misurabili orientate alla sostenibilità ed in particolare modo alla riduzione degli impatti ambientali, alla lotta al cambiamento climatico e al rispetto dei diritti umani dei lavoratori dell'intera catena del valore. Essenzialmente le imprese si trovano a fronteggiare un trend di pressioni crescenti rispetto alla sostenibilità a partire dal 2013 con l'introduzione della Direttiva 2013/34/UE "per quanto riguarda la comunicazione di informazioni di carattere non finanziario e di informazioni sulla diversità da parte di talune imprese e di taluni gruppi di grandi dimensioni".*

In questo contesto molte imprese stanno cercando certificazioni o modelli che le guidino verso una configurazione aziendale più sostenibile (Moroz & Gamble, 2021). Dal 2013, con l'emergere della certificazione B Corp, molte imprese hanno avviato e completato il processo di transizione verso la sostenibilità, rispettando i requisiti per ottenere lo status di B Corp e impegnandosi a mantenere questo stato e migliorare le proprie performance nel tempo. Il movimento delle B Corp è in costante crescita, come confermato da una ricerca de Il Sole 24 Ore³ che ha evidenziato un aumento del 26% delle imprese certificate come B Corp in Italia nel 2021.

A causa delle normative più stringenti, specie tra il 2023-2024, B-Lab, l'organizzazione promotrice della certificazione, ha avviato un processo di consultazione pubblica finalizzato a raccogliere opinioni su come migliorare e integrare i contenuti dell'attuale certificazione per renderla rispondente all'evoluzione legislativa e all'aspettativa degli stakeholder sulle b-Corp e sulle imprese in generale. La certificazione B Corp attraverso opportuna etichetta di marchio, consente di segnalare graficamente che l'impresa che ha generato il prodotto/servizio aderisce ad un network in cui il modello di condotta responsabile e l'attenzione alla sostenibilità sono una priorità (Cao et al., 2017; Conger et al., 2018; Navis & Glynn, 2011). In questo contesto, i segnali inviati agli stakeholder circa il proprio impegno sono particolarmente importanti. Trovare beneficio dell'impegno profuso attraverso una comunicazione che valorizzi l'impresa agli occhi degli stakeholder è quindi cruciale (Battilana, 2018; Navis & Glynn, 2011). Difatti l'adesione alla certificazione B-corp

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comporta una serie importante di implicazioni manageriali che devono portare l'impresa ad adeguarsi, qualora non rientri a pieno nel modello definito dalla certificazione, e a mantenere tale struttura nel tempo.

Sebbene siano molti gli studi che hanno analizzato l'aspetto della certificazione B-corp, investigando dei suoi effetti positivi (Conger et al., 2018; Gehman & Grimes, 2017; Moroz et al., 2018) e dei suoi effetti negativi (Liute & De Giacomo, 2022), pochi si sono concentrati sul processo di transizione che l'azienda vive nel passaggio a B-corp. Inoltre, i fondatori del movimento B-corp hanno invitato più volte negli anni gli studiosi di management a indagare le peculiarità degli approcci adottati dalle B corp anche rispetto ai propri stakeholder (Muñoz et al., 2018).

In particolare, quando ottiene una certificazione B corp, l'azienda ha necessità di segnalare ai propri stakeholders la transizione da un modello classico a un modello che integra all'interno della propria cultura organizzativa i principi di sostenibilità. In questo passaggio, si creano delle asimmetrie informative tra l'azienda e lo stakeholder che devono essere bilanciate. In particolare, da un lato gli stakeholder cercano segnali – azioni osservabili che forniscono informazioni su attributi non osservabili e risultati probabili (Spence, 1974) – che aiutino a colmare il divario tra ciò che gli stakeholder sanno dell'azienda e ciò che vogliono sapere (Miller e Triana, 2009), dall'altro, le aziende hanno il bisogno di inviare dei segnali di qualità agli stakeholders.

In questo contesto, l'utilizzo della Teoria dei Segnali come strumento per osservare i segnali inviati dalle imprese certificate B-corp attraverso i propri canali di comunicazioni circa il loro impegno per la sostenibilità e le proprie attività in quanto B-corp, rappresentano il contesto strategico per identificare gli spazi di miglioramento dell'attuale sistema di certificazione. La teoria dei segnali sta guadagnando crescente popolarità negli studi di management (Bergh e Gibbons, 2011; Connelly et al., 2011). Questa crescente popolarità è legata al fatto che la teoria indaga i meccanismi attraverso i quali gli individui e le organizzazioni trasmettono e interpretano le informazioni. Più specificamente, la teoria dirige l'attenzione sulle sfide fondamentali affrontate dai decisori strategici, affrontando in particolare come possono utilizzare i segnali per mitigare l'incertezza associata alla selezione da un insieme di scelte in situazioni caratterizzate da informazioni incomplete e distribuite asimmetricamente (Spence, 2002).

In particolare, l'ottenimento della certificazione B Corp offre l'opportunità di comunicare agli stakeholders gli sforzi di sostenibilità dell'azienda, principalmente grazie al miglioramento dell'esposizione mediatica, sbloccando vantaggi strategici (Chauhan & O'Neill, 2020; Conger et al., 2018; Grimes et al., 2018) e acquisendo distintività in un ambiente altamente competitivo (Harjoto & Laksmana, 2018). Inoltre, la certificazione B Corp aiuta le imprese sostenibili a entrare in una determinata categoria visibile che dà credito al loro impegno verso impatti sociali e ambientali positivi (Paelman et al., 2020), genera guadagni di reputazione e legittimità, nonché networking e, potenzialmente, benefici finanziari (Conger et al., 2018; Gehman & Grimes, 2017; Moroz et al., 2018). Attraverso la lente della Teoria dei segnali, gli autori hanno quindi avviato una analisi dei canali social di un cluster di imprese italiane certificate B-corp. Tale contesto rappresenta il campo di osservazione indiretta per rispondere quindi alle seguenti domande: Quali implicazioni manageriali derivanti dall'ottenimento della certificazione b-corp vengono comunicati agli stakeholder dalle imprese? Quali sono i potenziali miglioramenti della certificazione b-corp che possono essere rilevati dall'analisi della comunicazione delle imprese b-corp?

Scopo del paper. In questo contesto il contributo presentato fornisce un approfondimento della comunicazione avviata da una impresa dopo aver completato il processo di transizione a B corp ed averne ottenuto la relativa certificazione. Tale transizione rappresenta un impegno verso un modello di business più responsabile nei confronti della società. L'ottenimento, ed il mantenimento, della certificazione di B-corp impone infatti una attenzione al benessere degli individui e della società riletto attraverso le dimensioni chiave della sostenibilità e dei criteri ESG. In questo senso la dimensione della Governance copre un aspetto significativo delle richieste presenti all'interno del processo di certificazione a B-Corp. Metriche e policy adottate nei confronti dei dipendenti, della comunità e dei supplier, così come il livello di trasparenza interna ed esterna raggiunto, sono parte di questo processo di transizione e possono trovare evidenza all'interno de essere incluse anche nei sistemi di comunicazione avviata dalle organizzazioni.

Lo scopo di questo contributo è quindi comprendere se e quali messaggi comunicano le imprese che hanno ottenuto lo status di B-Corp in relazione agli aspetti su cui la certificazione B-Corp ha posto particolare attenzione. In termini di Teoria dei Segnali, lo studio intende osservare il contenuto del messaggio trasmesso dall'impresa attraverso i propri canali di comunicazione. Al fine di fornire un quadro completo che tenga conto delle prospettive sia dell'impresa che degli stakeholder, l'obiettivo del paper è anche valutare la reazione e il livello di apprezzamento di coloro che, esposti a questa comunicazione, hanno scelto di fornire un feedback.

In particolare, secondo la teoria dei segnali, all'interno di un ambiente di segnalazione il mittente (l'azienda B corp) decide come comunicare (o segnalare) quell'informazione (passaggio ad un modello Bcorp) e il destinatario (stakeholder) decide come interpretare l'informazione (segnale) e fornisce feedback (Connelly et al., 2011). L'ambiente di segnalazione è dove appare il segnale, il mittente o il segnalatore sarebbe l'azienda (nel nostro caso la Bcorp), il segnale potrebbe essere un messaggio, un reclamo o un'etichetta (in questo caso il post sui social), il destinatario sarebbe lo stakeholder che tenta di interpretare il segnale (in questo caso la reazione al post), e il feedback sarebbe fornito da un acquisto, un commento sui social o un messaggio inviato all'azienda (nel nostro caso il commento al post)

Metodo. L'analisi si è articolata in tre fasi. Nella prima fase, sono state selezionate tutte le imprese italiane BCorp operanti nel settore alimentare e ufficialmente registrate sulla piattaforma istituzionale dell'iniziativa B-Corp. Il settore alimentare è stato selezionato dagli autori in virtù della sua rappresentatività all'interno dell'industria italiana come mostrato da diversi studi (Annesi and Cucino, 2023; Passarelli et al., 2023). Infatti, questo settore riveste un ruolo significativo nell'economia italiana, contribuendo in modo sostanziale al PIL nazionale e all'occupazione. Successivamente, al fine di esplorare il sistema di comunicazione relativo alle tematiche B-corp, gli autori hanno ritenuto

opportuno focalizzarsi sul sistema di comunicazione che prevede, in linea con la Teoria dei Segnali, uno scambio di comunicazioni e reazioni tra impresa e stakeholder. In questo senso sono oggetto di questa analisi i canali social (Instagram o Facebook) delle imprese selezionate. Di conseguenza le aziende prive di un profilo social sono state escluse dall'analisi. Il risultato ha portato a 14 imprese italiane B-corp operanti nel settore alimentare e ufficialmente iscritte alla piattaforma istituzionale dell'iniziativa B-corp.

Nella terza fase, i ricercatori hanno selezionato le due piattaforme che tutte le 14 imprese avevano attive ovvero il canale Instagram ed il canale Facebook. Il segnale attivato dall'impresa dopo aver completato il processo di transizione a B-corp è stato analizzato tramite analisi qualitativa dei contenuti dei post (content analysis) contrassegnati con un hashtag relativo al termine "B-corp". Tale analisi è stata sviluppata attraverso l'utilizzo del software Nvivo. Il segnale attivato dagli stakeholder è invece stato analizzato attraverso le reazioni attivate dagli stakeholder apponendo un commento, un like/dis-like, o condividendo il post.

Dal punto di vista analitico, attraverso un approccio deduttivo, il totale dei post raccolti è stato codificato in nodi due principali categorie quali: (1) post con contenuto volutamente legato allo status di B-corp e (2) post non legato allo status B-corp. La scelta di includere un hashtag, infatti ha il potere di sintetizzare gli elementi essenziali che si vogliono trasmettere attraverso un post ed il framework comunicativo all'interno del quale si vuole inserire una determinata comunicazione.

Risultati. La ricerca condotta ha comportato l'analisi di oltre 6000 post pubblicati sui social Instagram e Facebook da parte di 14 aziende italiane BCorp operanti nel settore alimentare ed ufficialmente registrate sulla piattaforma istituzionale dell'iniziativa B-corp.

In linea generale emerge che le imprese pubblicano 2 volte di più sulla piattaforma facebook poiché consente di scrivere contenuti anche privi di immagini.

Il primo livello di analisi ha messo in luce che le imprese hanno rispettivamente pubblicato circa 300 post legati al concetto di b-corp tramite hashtag. Ovvero solo il 4% dei post rivolti agli stakeholder Facebook e il 5% dei post rivolti agli stakeholder instagram riguardano volutamente il tema bcorp.

La categorizzazione dei post secondo l'approccio deduttivo rispetto alle dimensioni bBcorp, ha consentito di mettere in luce una maggiore attenzione alla comunicazione delle tematiche ricadenti all'interno del tema b-corp "governance". Il 55% dei post contrassegnati dal #b-corp (e affini) riguarda infatti la dimensione della governance e dei suoi sotto-temi.

Il secondo aspetto B-corp principalmente trattato è quello degli impatti sulle comunità con il 21% dei contenuti focalizzato sul tema, l'8% riguarda gli impatti sull'ambiente. Il 14% dei post ha utilizzato la connessione al framework b-corp facendo riferimento di fatto a tematiche inerenti alle B-corp, ma non classificabili in modo certo ad una delle categorie individuate. Infine, in maniera equivalente, (ovvero attraverso lo 0,66% dei post per categoria) vengono trattate le categorie dei clienti, dei lavoratori e la trasparenza d'impresa.

Le analisi mostrano che alcune dimensioni B-corp non trovano spazio all'interno dei segnali inviati dalle imprese attraverso post pubblicati sui propri profili. Tale evidenza mostra che da parte delle imprese alcune tematiche B-corp non sono considerate utili per inviare un segnale circa la propria natura B-corp o che alcune tematiche B-corp non sono percepite come collegabili alla sfera B-corp.

Tra le aree non coperte in toto, e quindi non segnalate in alcun modo, vi è il sottotema "metriche di governance" che al suo interno copre gli aspetti relativi ai flussi finanziari di una impresa. In questo senso è possibile ipotizzare che la storica dicitura "reportistica non finanziaria" legata alla rendicontazione degli aspetti di sostenibilità abbia costituito un bias per le imprese che credono poco rilevante o elegante collegare la propria condotta di governance (di tipo B-corp) alle tematiche di tipo finanziario.

L'analisi dei post non b-corp, come descritto, ha visto un approfondimento dei contenuti trattati per identificare eventuali segnali di comunicazione relativa alle aree di impatto b-corp.

Solo l'1% dei post non contrassegnati con l'hashtag b-corp tratta temi b-corp. Seppur il numero sia basso e forse irrilevante (63 in totale) i temi presentati racchiudono alcuni dei principi fondanti della certificazione b-corp che, per questo, meriterebbero di essere valorizzati all'interno del giusto quadro.

Interessante è notare che alcuni aspetti scarsamente trattati o non trattati nei post Bcorp sono invece presenti all'interno di questo cluster di post. Diversamente, la dimensione della governance, largamente trattata nel cluster precedente, è praticamente assente in questa seconda fase analitica. In linea generale, ambiente, lavoratori e fornitori sono le aree di impatto verso cui le imprese hanno voluto trasmettere un più alto numero di segnali.

L'osservazione della comunicazione non istituzionale implementata attraverso canali social fornisce il vantaggio di capire quali elementi le imprese credono siano più interessanti per gli stakeholder e decidono quindi di comunicare. Rimane quindi da capire perché alcune dimensioni B-corp che portano ad un impegno importante da parte dell'impresa, non vengano poi comunicate o valorizzate attraverso i propri canali.

Limiti della ricerca. I limiti della ricerca presentata sono legati ad una analisi sviluppata attraverso la consultazione di sole due piattaforme social. I dati non sono quindi stati confrontati con eventuali bilanci di sostenibilità e/o di impatto. Tale limite, costituisce una scelta consapevole da parte delle ricercatrici che volevano fornire un focus sulla relazione costruita con lo stakeholder di massa piuttosto che su uno stakeholder di nicchia quale quello interessato alla comunicazione istituzionale contenuta all'interno di bilanci/report pubblicati in sezioni specifiche del sito web.

Il secondo limite è relativo all'assenza di un confronto diretto con le imprese coinvolte nello studio. Tale confronto potrebbe arricchire le chiavi di interpretazioni relative alle scelte di comunicare o non comunicare determinati temi.

Un altro limite della ricerca è legato al fatto che le attività di comunicazione sono sempre più spesso esternalizzate dall'impresa. Le competenze richieste per gestire un sistema di comunicazione multi-canale possono infatti non essere presenti all'interno di imprese che lavorano in settori differenti. In questo senso, la mancata inclusione di un hashtag può derivare anche da una non totale consapevolezza del mondo B-corp da parte di coloro che forniscono il servizio di comunicazione, piuttosto che da una scarsa consapevolezza dell'impresa stessa.

Implicazioni. Il contributo fornisce implicazioni relative alla necessità di diffondere maggiore consapevolezza interna rispetto a tutte le tematiche e aree coperte dall'essere certificati B-corp. In questo senso la scelta stessa del fornitore del servizio di comunicazione può essere orientata rispetto alla capacità dello stesso di segnalare in modo completo e valorizzare quali sono le implicazioni di una impresa che decide di certificarsi B-corp.

In secondo luogo, emerge il ruolo della comunicazione e della trasparenza. La ricerca evidenzia l'importanza della comunicazione aziendale e della trasparenza nei confronti degli stakeholder. Le imprese devono comunicare in modo chiaro e trasparente i propri sforzi in materia di sostenibilità, anche attraverso i canali social, per creare fiducia e coinvolgere i propri pubblici di riferimento.

In terzo luogo, l'analisi suggerisce una maggiore attenzione ai segnali inviati dagli stakeholder. L'analisi dei segnali inviati dalle imprese attraverso i canali di comunicazione, come i social media, fornisce insight preziosi per migliorare la comunicazione e individuare aree di sviluppo della certificazione B-Corp. Le imprese devono essere consapevoli dei messaggi che trasmettono e dell'efficacia della loro comunicazione sulla sostenibilità.

Infine, implicazioni si hanno rispetto all'evoluzione della certificazione B-Corp. L'evoluzione normativa ha portato l'organizzazione promotrice della certificazione B-Corp, B-Lab, a rivedere e migliorare i criteri di certificazione per allinearsi alle nuove leggi e alle aspettative degli stakeholder. Questo indica la necessità di un costante aggiornamento e miglioramento dei modelli di valutazione della sostenibilità.

Originalità del paper. Lo studio presenta quattro elementi di originalità. Primo il paper si distingue per il suo focus sull'impresa come principale soggetto della comunicazione, piuttosto che sugli stakeholder. Mentre molte ricerche si concentrano sull'interpretazione degli stakeholder dei segnali inviati dalle imprese, questo studio adotta un approccio inverso, osservando attentamente la strategia comunicativa delle aziende certificate B-Corp. Questo approccio insolito fornisce una nuova prospettiva sulla comunicazione aziendale e sull'efficacia dei messaggi trasmessi.

Secondo, un altro elemento di originalità è rappresentato dall'utilizzo dell'analisi qualitativa della comunicazione aziendale come strumento proxy per valutare potenziali miglioramenti nell'evoluzione della certificazione B-Corp. Piuttosto che concentrarsi esclusivamente sui risultati finanziari o sugli indicatori di sostenibilità, il paper esplora il contenuto e la strategia comunicativa delle imprese come indicatore di aderenza ai principi B-Corp. Questo approccio innovativo offre un metodo alternativo per valutare l'efficacia e l'accuratezza della comunicazione aziendale.

Terzo, il paper fornisce indicazioni chiare alle imprese di uno specifico settore su aree non trattate nella loro comunicazione, suggerendo potenziali miglioramenti per il futuro. Questo aspetto è particolarmente importante perché aiuta le imprese a identificare le lacune nella loro strategia comunicativa e a sviluppare piani più efficaci per comunicare il loro impegno per la sostenibilità. In questo modo, il paper offre un contributo tangibile al miglioramento della comunicazione aziendale e alla promozione della trasparenza e della responsabilità nel settore.

Infine, mentre molti studi si concentrano sugli effetti della certificazione B-Corp sulle prestazioni aziendali, questo paper si distingue per esaminare in dettaglio la comunicazione delle imprese subito dopo aver ottenuto la certificazione. Questo approccio fornisce una prospettiva preziosa su come le imprese intendono comunicare il loro impegno per la sostenibilità e le sfide incontrate durante la transizione verso un modello aziendale più responsabile.

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Individuals' Goal Alignment in Humane Entrepreneurial Oriented Organisations: A Preliminary Study

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Abstract

In the evolving economic landscape, firms must face challenges and opportunities concerning sustainability in its societal, environmental and economic dimensions. Additionally, strategic HR management plays a key role within organisations, underlining the importance of ensuring employees' engagement and their alignment with overarching corporate goals. By departing from goal framing theory and the humane entrepreneurship perspective, this study aims to preliminarily explore the relationship between goal alignment and humane entrepreneurship. Using data from an ongoing data collection conducted among Italian firms' employees, we use scales currently under testing and validation to check for a potential relationship between the two constructs. The preliminary results suggest a positive mutually reinforcing relationship between goal alignment and humane entrepreneurship. We highlight the need for further investigation on this relationship, to the benefit of a deeper understanding of short- and long-term social and corporate sustainability aspects. Ultimately, we draw relevant and inspiring implications for theory and practice of management, entrepreneurship and organisational strategy.

Keywords: Goal Alignment, Humane Entrepreneurship, Sustainability

Framing of the research. *In the evolving global economy, organisations face unprecedented challenges and opportunities. The shifting social conditions and employees' working needs make re-evaluations of traditional business models and strategies necessary (Venkatesh & Speier, 2000). On the one hand, ensuring individual employees' objectives are aligned with the higher-level firms' goals is fundamental to strategic agility and corporate performance (Santos, 2012). On the other, prioritising ethical considerations, personnel's welfare, and social impact alongside profitability are key to demonstrating organisational commitment and engagement in human entrepreneurial aspects (Kim et al., 2021b). The emphasis on joint goals and appropriateness standards, proper of normative goal alignment, encourages employees' willingness to attain corporate objectives thanks to feelings of identification and collective share. Corporate humane entrepreneurship actions, in turn, can further reinforce individuals' engagement, their organisational identification and their alignment to higher-level objectives (Foss & Lindenberg, 2012). Therefore, exploring the relationship between goal alignment and sustainability-oriented entrepreneurial actions appears relevant to the current business scenario.*

Goal framing theory and goal alignment

Firstly, aligning individual employees' goals with the overarching corporate objectives is a critical determinant of organisational performance and competitive advantage (Lindenberg & Foss, 2011). In the context of goal orientation and strategic alignment, the goal framing theory explores how the frame of objectives and social, environmental variables affect people's perceptions, attitudes, and behaviours (Birkinshaw et al., 2014; Lindenberg & Steg, 2013). Indeed, the theory forecasts three overarching objectives: normative, gain, and hedonic goal frames. Scholars suggest normative goals harmonise with the corporate organisational, market, and strategic objectives, whereas hedonic and gain goals prioritise individual interests. While the hedonic category remarks the importance of personal and professional growth, gain goals emphasise individual well-being, encompassing a balanced work-life dynamic and satisfactory compensation in return for employment (Foss & Lindenberg, 2013; Lindenberg & Foss, 2011).

The most important aspect of the alignment between individual and corporate objectives is the concept of normative goals, which implies employees have incentives to act in line with established standards and codes of conduct within their companies while accomplishing specific tasks or goals (Lindenberg & Steg, 2007). Employees' normative objectives are

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essential for the development of an organisational culture that is respectful of workers, allows their growth, and promotes a corporate idea of business ethics (Treviño & Nelson, 2016).

Moreover, in line with social identity theory, the goal framing theory maintains the normative goal is characterised by collective identification and the eagerness to act appropriately to the benefit of a supra-individual entity, such as the team or the organisation (Van Knippenberg, 2000). Scholars highlight how normative goal alignment contributes to the harmonisation of the goals of managers and employees with the firm's strategic imperatives, fostering a cohesive organisational culture where human and social capital can thrive (Buller & McEvoy, 2012). In turn, strategic management and human resource literature acknowledge employees' alignment with firms' goals is pivotal to the development of organisational capabilities and corporate performance, as well as to the growth of individuals' skills, motivations, and opportunities (Foss & Lindenberg, 2012). However, the transition from organisational goals into tangible results requires employees both understand firms' objectives and appreciate the actions and measures that are conducted to fulfil the corporate strategy (Boswell et al., 2006).

Therefore, we advocate goal alignment can be encouraged and reinforced among normatively goal-aligned employees thanks to human-oriented measures and policies fostering their engagement, development and well-being (Alagaraja & Shuck, 2015). Actions in favour of people's well-being can be interpreted in a broader sense, encompassing communities' and environments' aspects along with economic ones. By adopting a comprehensive idea of corporate sustainability, promoting the congruence between employees' and organisational strategic goals underscores the critical importance of human resources as a strategic asset for value creation and long-term growth (Guest, 1997; Ribeiro & Gomes, 2016). In turn, the matching between human resources and organisational goals has the potential to foster corporate effectiveness and firms' performance, leading companies to higher competitive advantage (Guest, 2011; Wood, 1999). All in all, academic literature and business practice show corporate goals are increasingly tied to a more comprehensive concept of firm, where economic profits, human well-being and sustainability are recognized as increasingly intertwined (Muñoz & Dimov, 2015). This has led to the foundation of a new concept incorporating these aspects, namely humane entrepreneurship.

Humane entrepreneurship: a new, multifaceted concept

Humane entrepreneurship has emerged as a notion integrating business and human aspects within organisational boundaries (Kim et al., 2021a). The concept integrates the entrepreneurial orientation with an ethical approach, emphasizing the importance of communities' and environment's well-being in addition to economic aspects. Scholars define humane entrepreneurship as an entrepreneurial approach prioritizing human welfare and ethical considerations, leading to sustainable and socially responsible business practices (Kim et al., 2018; Parente et al., 2018). This approach challenges traditional business paradigms by advocating for a balance between profit generation and social responsibility (Parente & Kim, 2021).

The theoretical underpinnings of humane entrepreneurship draw from various disciplines, including business ethics, corporate social responsibility (CSR), and social entrepreneurship, along with the key concept of the creation of shared value (CSV) (Porter & Kramer, 2011; Santos, 2012). These perspectives reinforce the idea entrepreneurial ventures can operate for the greater good, thus emphasizing a humane approach benefits society and contributes to firms' competitive advantage (Vesci et al., 2021).

Empirical studies on humane entrepreneurship demonstrate its positive impact on various organisational outputs, including employee satisfaction, innovation, and financial performance (DiVito & Ingen-Housz, 2019; Kim et al., 2021b). For instance, scholars highlight how companies that invest in employee well-being and ethical practices tend to outperform their peers in the long run, which suggests a positive relationship between humane practices and corporate success. Similarly, organisations incorporating social and environmental considerations into their strategies are more likely to be sustainable and resilient (Le, 2022).

Although conceptualizations of humane entrepreneurship may not entirely coincide among scholars, its three main dimensions have been identified as the individual perceptions of entrepreneurship, sustainability, and human orientation (Parente et al., 2018). First, the individual perception of entrepreneurial orientation (IEO) reflects a person's inclination towards innovation, risk-taking, and proactiveness in identifying and exploiting opportunities, which puts into evidence the role of personal values and attitudes in shaping entrepreneurial ventures that are not only innovative but also ethically grounded (Lumpkin & Dess, 1996). Conversely, the individual perception of sustainability orientation (ISO) highlights a commitment to long-term ecological and societal well-being, thus integrating economic, environmental, and social goals for sustainable development (Parente et al., 2018; Schaltegger & Wagner, 2011). Indeed, sustainability-oriented businesses adopt holistic approaches to address societal challenges, demonstrating the potential of humane entrepreneurship to drive positive change in society (Stubbs & Cocklin, 2008). Lastly, the concept of the individual perceptions of human orientation (IHO) includes the emphasis placed on human values, well-being, and ethical treatment of all stakeholders (Kim et al., 2018). Pirson (2017) highlights the significance of IHO for current business activities, as this dimension is foundational to creating organisations excellent on both economic performance and human dignity, equality and social justice.

By integrating these three aspects of sustainability, i.e., IEO, ISO, and IHO, humane entrepreneurship offers the possibility of a comprehensive framework for understanding current entrepreneurial practice and foster growth. The balanced consideration of these aspects allows for harmonious integration of innovation, commitment to environmental sustainability, and dedication to human values and socially oriented actions among corporate goals addressing firms' competitiveness (Kim et al., 2021a).

Therefore, humane entrepreneurship actions are meant to create benefits to communities both internally and externally, employees and stakeholders included (Parente & Kim, 2021). As employees' involvement and identification with organisational goals are key to their goal alignment with firms strategies, measures undertaken to enhance an all-encompassing sustainability idea and meant to people's well-being reinforce workers' commitment to corporate objectives. The more people are normatively aligned to corporate goals, the more their alignment will be strengthened by the presence of humane entrepreneurship initiatives. In a reciprocal manner, more humane-entrepreneurship oriented actions will foster employees' appreciation of the firm, thereby fostering corporate goal alignment in a positive, mutually reinforcing loop. Consequently, the synergy among these dimensions shows high potential to enhance economic success and positively contribute to the society and the environment.

Overall, scholars suggest aligning employees' objectives with organisational goals optimizes corporate performance and sustainability and eases the development of a culture of empowerment, recognition, and personal development, which are key to humane entrepreneurship (Boswell et al., 2006). Therefore, by integrating emerging studies on corporate goal alignment and humane entrepreneurship, we suggest a mutually supportive relationship between the two concepts, where the former facilitates an organisational culture oriented to the latter, which in turn reinforces employees' commitment to fulfilling firms' objectives.

Purpose of the paper. The potential synergy between goal alignment and humane entrepreneurship offers a promising avenue for organisations to enhance their performance and their positive societal contribution. Nevertheless, these two concepts still lack adequate tools of evaluation and measurement. In the current understanding of goal alignment, grounded on goal framing theory, we miss an adequate tool of evaluation for the assessment of normatively goal aligned employees. Moreover, the lack of an accepted framework for implementing humane entrepreneurship practices poses a challenge for organisations seeking to adopt this approach (Dębicka et al., 2021). Additionally, despite ongoing academic debate, neither do scholars agree on a unique assessment tool for humane entrepreneurship, nor does a comprehensive instrument exist yet (Parente et al., 2020).

Therefore, this paper aims to explore the significance of the relationship between goal alignment and humane entrepreneurship, arguing it is essential for employees' supportive organisational cultures and performance. By integrating insights from the goal-framing literature, strategic management and organisational studies, we highlight the potential for academic theory and managerial practice of exploring the relationship between corporate goal alignment and humane principles, by also hinting at the main benefits of their synergy on human and financial aspects (Porter & Kramer, 2011).

In short, this preliminary study aims to shed light on the interlocutory relationship between goal alignment and humane entrepreneurship by also proposing for them new measurement scales, which are currently under testing and validation. In line with current literature, we expect firms that maintain a normative goal aligned organisational culture supported by humane entrepreneurship principles and practices are better equipped to obtain financial success and meaningfully contribute to societal well-being and environmental sustainability (Bocken et al., 2014).

In doing so, this paper enriches the debate on the role of humane entrepreneurial practices and strategic goal alignment in business strategy, offering new academic research avenues and practical insights for academics and leaders seeking to build more ethical, innovative, and resilient organisations in an era of global challenges and opportunities.

Methodology. The paper is grounded on a wider data collection involving 7 companies placed in the North-East of Italy. The sample of firms participating in the survey belong to different industry sectors and are of high dimensions (more than 250 employees). The data collection started at the beginning of 2024 and is currently ongoing.

Surveys are emailed to firms' employees mostly through their respective human resource managers. Managers are charged with forwarding the questionnaires links to their employees, and surveys were progressively closed around two weeks later. Therefore, we limit the present study to 3 firms that reached the target number of employees by mid-February 2024, for a sample of 744 workers.

The complete survey comprises more than 20 constructs of interest, for more than 50 items overall. The survey text was first elaborated in English and translated into Italian, following a back-to-back translation procedure as indicated by Brislin (1986). The variables included in the study pertain to individual perceptions of the work environment and individual working conditions, such as the perceived company's technology readiness, the implementation of agile working methods or creative behaviour. For the purposes of our research, however, we consider the following constructs.

Individual Perception of Entrepreneurial Orientation (IEO)

The scale measuring this first dimension of humane entrepreneurship is elaborated from the paper by Hansen et al. (2011), comprising six items evaluated on a seven-point Likert scale. The sentences pertain to new services or products launched or renewed by the company during the last three years, as well as to the entrepreneurial orientation and beliefs of higher-level managers and directors or the overall firm response to competitiveness.

Individual Perception of Sustainability Orientation (ISO)

The survey questions pertaining to ISO are drawn from Muñoz and Dimov (2015). Participants are asked to express their degree of agreement or disagreement on four sentences on a seven-point Likert scale, ranging from 1= strongly disagree to 7= strongly agree. Specifically, the items investigate firms' availability and willingness to adopt measures and implement actions to the benefit of their communities, the environment and a parsimonious use of resources.

Individual Perception of Human Orientation (IHO)

The construct is evaluated thanks to an adapted version of the scale from the article by Kim et al. (2018), which comprises four questions on a seven-point Likert scale. Participants are required to express their rate of agreement on statements regarding their perceptions of inclusion, non-discrimination and empathy by the firm managers. An example of sentence is 'The managers of the company I work for support people in their skills development' or 'The managers of the company I work for do not discriminate any individual'.

Goal alignment

In order to assess employees' alignment with corporate goals, participants are given six sentences with six objectives indicated by capital letters, two-by-two corresponding to normative, gain and hedonic overarching goals as according to the classification indicated by Foss & Lindenberg (2013). Then, participants are instructed to reorder the six goals from the most important to the least relevant to them, by writing down the order of the letters. Some examples of the goals are 'Work with people and having good social contact with co-workers' (hedonic), 'Having growth and career opportunities' (gain) and 'To reach my firm's objectives' (normative). Scores are assigned to each participant on the basis of the first two objectives present in their lists, where 0 means no normative goal in the first two positions, 1 stands for a normative goal in the second place, 2 indicates a normative goal in the first place and 3 both normative goals ranking first and second.

Control variables

We include as control variables participants' gender, age, level of education and caregiving responsibilities with respect to children or parents. As for work-related control variables, we ask participants' level of seniority within the company, their job position and type of contract.

Results. Preliminary analyses were conducted on a sample of 744 employees. Among the participants, 398 are men. Most people hold a high school diploma (57.5%), followed by those with a bachelor's or master's degree (30.8%). Moreover, an overwhelming majority (718 employees) hold a long-term contract and are between 39 and 54 years old (37.8%). Around 30% of the sample comprises executive staff and minor managerial figures, such as business unit representatives or heads of functions.

Since the constructs under examination are still under-explored by current literature and lack homogeneous and validated measurement tools, we undertook first exploratory and confirmatory factor analyses to find some preliminary confirmation of the validity of our scales. Although these analyses are still ongoing, the preliminary results provide some confirmation of the consistency of our operationalization of these variables.

After conducting the preliminary analyses and descriptives sample statistics, we plotted a Pearson correlation matrix showing the linear relationship among the variables of our interest. The results can be seen in Table 1.

Table 1. Correlation matrix coefficients for IEO, ISO, IHO and goal alignment. ** stands for $p < 0.001$. Source: the authors.

	IEO	ISO	IHO	GOAL ALIGNMENT
IEO	1	0.45**	0.39**	0.12**
ISO	0.45**	1	0.63**	0.16**
IHO	0.39**	0.63**	1	0.21**
GOAL ALIGNMENT	0.12**	0.16**	0.21**	1

First, we considered the bilateral relationships among the three dimensions of humane entrepreneurship and goal alignment. The correlation matrix reveals that the IEO, ISO and IHO dimensions show some degree of correlation one with the other, but their coefficients seem to suggest no multicollinearity risks as they are all below the 0.7 threshold. As for the relationship between the three separate dimensions of humane entrepreneurship and goal alignment, the Pearson correlation coefficients seem to suggest there is a mild to low linear relation between them, in a positive direction. Coefficients are all significant at 0.001.

At the subsequent stage, we aggregated the three humane entrepreneurship dimensions and considered them as a unique variable, namely humane entrepreneurship. The Cronbach's alpha for this scale is 0.74, which can be considered acceptable for an exploratory study of a scale that is not established yet. The corrected item-total correlation also shows values above 0.3, indicating no major issues within the item-total statistics.

Table 2 shows the results of the Pearson correlation between goal alignment and humane entrepreneurship.

Table 2. Correlation matrix coefficients for goal alignment and humane entrepreneurship. ** stands for $p < 0.001$. Source: the authors.

	GOAL ALIGNMENT	HUMANE ENTREPRENEURSHIP
GOAL ALIGNMENT	1	0.205**
HUMANE ENTREPRENEURSHIP	0.205**	1

Also in this case, we highlight the correlation between the two variables (goal alignment and humane entrepreneurship) is positive and significant ($p < 0.001$), although the magnitude of the coefficient suggests a mild relationship between the two constructs.

Consequently, based on the above-mentioned literature framework and evidence from current practice, we interpret our preliminary results as encouraging to deepen the relationship between the two variables. As these are pure

correlations, we are interested in moving further and exploring the role played by other intervening variables that could provide us with a refined understanding of the relationship between goal alignment and humane entrepreneurship. Among these variables, we think a promising explanatory role could be covered by variables pertaining to individual perceptions of corporate aspects (of innovative working practices, of technological invasion and so forth) or to personal conditions on the workplace (such as job autonomy).

It is also plausible that, with a different sample of employees, we could obtain diverse results in the direction of a stronger relationship between goal alignment and humane entrepreneurship. Importantly, the elaboration of the measurement scales needs to undergo further trials and refinement efforts, in order to improve the validity of these research assessment tools. Nevertheless, the preliminary results of the present paper seem to suggest that moving forward and better exploring the mechanisms and the intertwined dynamics of goal alignment and humane entrepreneurship could be a promising avenue for future research studies and for business practice.

Research limitations. The main limitation of the study pertains to the cross-sectional design of the survey, which does not allow us to assert causal linkages among the variables of interest. Moreover, we underline the fact that we rely on self-reported measures by participants, with the risk of common method bias. Despite adopting design precautions during the survey elaboration, this potential risk must nevertheless be reported.

In addition, we point out the limited geographic scope of our research, which hinders generalisability of our findings. We also warn that the differences among the firms of our sample in terms of employees' sample sizes, business unit groupings and other factors hinder any intra-group comparisons, suggesting it is better to consider data per company in aggregate terms.

Lastly, we remark that we make use of new scales that have undergone preliminary exploratory and confirmatory factor analyses, which deserve and are in need for further testing and refinement. Therefore, results are far from conclusive, as the measurement tools themselves are not entirely finalised.

Managerial implications. The findings of this study offer significant insights into the synergy between goal alignment and humane entrepreneurship, presenting valuable implications for managers and entrepreneurs striving to foster innovative, sustainable, and socially responsible business environments.

Firstly, our preliminary results encourage managers to take actions to align organisational objectives with humane entrepreneurship aspects, by incorporating social, ethical, and environmental considerations within firms' goals. This means cultivating a corporate culture which reinforces long-term commitment to sustainable outcomes. Therefore, organisations are encouraged to involve their employees and value their contribution to achieve corporate objectives, which may lead to higher motivation, creativity, and loyalty. To this end, training and development programs that promote these values and enable employees to actively contribute to humane-oriented corporate actions may be useful. In a positive mutually reinforcing cycle, this may strengthen employees' sense of belonging and commitment to organisational goals. We show that companies have the possibility to integrate economic objectives with corporate sustainability goals, to the benefit of their employees' well-being.

Secondly, the study implications extend beyond internal organisational management and underline the importance of fostering a humane entrepreneurship image to cater to a wider public of stakeholders. Beyond employees, public commitment to sustainable objectives may translate in higher involvement of customers, investors, and partners who share similar values. Therefore, companies adopting corporate practices in the direction of humane entrepreneurship have the potential to attract socially conscious investments and foster collaborative partnerships benefitting corporate sustainable growth.

Thirdly, preliminary research in the field highlights the need for firms' policies and governance structures that support organisational cultures of employees' alignment to corporate goals. Apart from economic benefits, leaders should enhance and implement policies that promote ethical business practices, social responsibility and environment-friendly actions, paying attention to ensure the pursuit of business goals matches with humane exigencies.

Lastly, this preliminary study results seems to suggest businesses demonstrating a strong commitment to humane entrepreneurship actions are more likely to be innovative and adaptable. This approach may be beneficial to effectively address societal, environmental and economic challenges, thus opening up new growth and employees' development opportunities.

Originality of the paper. Thanks to our paper, we provide a new and interesting perspective on the integration of goal-framing theory with humane entrepreneurship, suggesting a mutually reinforcing relationship between a cohesive and strategically aligned organisational culture and humane entrepreneurial practices. The originality of this research lies in its comprehensive standpoint which integrates insights from organisational behaviour, strategic management and entrepreneurship, delving into how individuals' and organisational goals can align to the benefit of economic, societal and environmental sustainability. The study also remarks the importance of adopting humane entrepreneurial measures, in order to enhance both people's well-being and corporate performance.

The present investigation stands out for its multi-dimensional analysis of goal alignment and humane entrepreneurship processes, offering a novel perspective on the mechanisms through which employees' commitment and engagement with corporate objectives can be maximised. Contextually, we present scales currently under testing and in need for further validation on goal alignment and humane entrepreneurship, which are new concepts still in need of adequate measurement tools currently missing in present literature. We also show the first results of an ongoing study

including these measurement scales, which are among the first operationalisations of the humane entrepreneurship and goal alignment constructs. By doing this, we hope to encourage further academic contributions in the field.

Lastly, the preliminary findings of this study offer a valuable perspective to organisational and management studies, underscoring the potential of the synergy between goal alignment and humane entrepreneurship to both individual and corporate success. In the end, we hope to stimulate further research on the evolving dynamics between goal alignment and humane entrepreneurship within diverse organisational contexts and over time.

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Open Social Innovation per affrontare le sfide globali: il caso Isinnova

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Abstract

Questo articolo esplora il concetto di innovazione sociale aperta come approccio fondamentale per affrontare sfide sociali importanti come il cambiamento climatico, le pandemie e le disuguaglianze. Questo modello promuove la collaborazione tra cittadini, società civile, organizzazioni del settore privato, istituzioni e pubblica amministrazione per affrontare collettivamente le sfide, dall'identificazione dei problemi alla scala delle soluzioni innovative. L'apertura di questo processo favorisce lo sviluppo e il miglioramento delle soluzioni, facilita un apprendimento rapido attraverso contesti sociali diversificati e genera impatti positivi sulla società. Lo sforzo collettivo orchestrato dell'innovazione sociale aperta aiuta a conciliare le incertezze associate alla complessa natura delle sfide sociali. Sottolineando la necessità di azioni collettive e sforzi imprenditoriali che coinvolgano diverse parti interessate, gli autori indagano su come le pratiche di innovazione aperta possano essere adattate con una prospettiva sociale. Più specificamente, partendo dall'analisi delle pratiche classiche di innovazione aperta definite dalla letteratura sul tema, lo scopo del paper è quello di analizzare le caratteristiche specifiche delle pratiche di innovazione sociale aperta mettendo in evidenza la loro configurazione specifica in un contesto sociale. Il paper contribuisce sia dal punto di vista teorico che pratico. Dal punto di vista teorico, il paper contribuisce alla recente letteratura sulle innovazioni sociali aperte attraverso l'identificazione e la caratterizzazione delle pratiche di innovazione sociale aperta. Dal punto di vista pratico, il paper fornisce utili spunti per manager e decisori politici al fine di definire strategie e politiche volte ad affrontare le sfide sociali adottando un approccio di innovazione aperta.

Key words: *open social innovation; open innovation; innovazioni sociali; sfide sociali*

Impostazione della ricerca *Affrontare importanti sfide sociali come il cambiamento climatico, le pandemie o le disuguaglianze richiede azioni collettive e sforzi imprenditoriali che coinvolgano cittadini, governi, istituzioni e organizzazioni non governative (Chesbrough, 2020; Markman et al., 2019; Seelos et al., 2023). In questo contesto, emerge il concetto di open social innovation come un paradigma di notevole rilevanza nell'affrontare le sfide sociali, in quanto si tratta di una pratica che promuove il coinvolgimento di attori diversi nei processi di innovazione (Bogers et al., 2020; Chesbrough & Di Minin, 2014; McGahan et al., 2021). L'apertura ai processi di innovazione sociale richiede infatti che manager e imprenditori incoraggino e coordinino la partecipazione di molteplici stakeholder (Chesbrough & Di Minin, 2014; Cucino, 2023; Mair et al., 2022, 2023). In altre parole, l'innovazione sociale aperta incoraggia la collaborazione tra attori di diverse origini per trovare soluzioni innovative ai problemi sociali (Bertello et al., 2022; Mair et al., 2022; Mair & Gegenhuber, 2021). Secondo questo paradigma, cittadini, società civile, organizzazioni del settore privato, istituzioni e pubblica amministrazione lavorano insieme in un'azione collettiva lungo l'intero processo di innovazione: dall'identificazione delle sfide alla generazione di idee per affrontarle, e infine, alla scala di queste soluzioni (Cucino, 2023; Vesci et al., 2021).*

La ricerca ha mostrato come l'open social innovation offre molti benefici tra i diversi attori coinvolti nel processo di innovazione sociale (Bertello et al., 2022; Bogers et al., 2020; Chesbrough & Di Minin, 2014; Mair et al., 2022). In primo luogo, il processo di interazione promuove lo sviluppo di nuove soluzioni o il potenziamento di quelle esistenti (Chesbrough & Di Minin, 2014). In secondo luogo, basandosi su una comprensione condivisa del problema, attori provenienti da contesti sociali diversi (ad esempio, amministrazione pubblica o innovatori della società civile) possono imparare insieme e superare più rapidamente le sfide sociali (Bertello et al., 2022; Mair et al., 2022). Inoltre, il paradigma dell'open social innovation non solo consente lo sviluppo e l'attuazione di soluzioni innovative, ma avvia anche un processo di apprendimento capace di generare un impatto sociale positivo (Bogers et al., 2020; Mair et al., 2022). Inoltre, avvicinandosi all'innovazione sociale aperta come uno sforzo collettivo orchestrato aiuta a conciliare le incertezze associate alla natura complessa e sistemica delle sfide sociali (Hargrave & Van De Ven, 2006; Markman et al., 2019; Mair & Seelos, 2017).

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Tuttavia, nonostante l'interesse recente e crescente sul potenziale dell'innovazione aperta per affrontare le sfide sociali (Gegenhuber e Mair, 2024), poco è stato esplorato su come le pratiche di open social innovation generino impatto sociale. Comprendere questa questione implica inevitabilmente che i ricercatori debbano considerare tutti gli stakeholder coinvolti, nonché le iniziative - costellazioni di problemi, soluzioni e attori - che emergono dal processo di innovazione sociale basato sull'azione collettiva (Giones et al., 2020; Muñoz et al., 2020; Vanderhoven et al., 2020).

Obiettivo del paper. Per far progredire la comprensione teorica dell'open social innovation, gli autori declinano l'open social innovation come fenomeno multi-stakeholder basato sull'azione collettiva e sforzi imprenditoriali che coinvolgono diverse parti interessate. Come tale, esplorano come le pratiche di open innovation possano essere adattate con una prospettiva sociale. In questo contesto, partendo dall'analisi delle pratiche classiche di innovazione aperta definite dalla letteratura sul tema (Ferrigno et al., 2022, Spithoven et al., 2013) gli autori analizzano le caratteristiche specifiche delle pratiche di open social innovation mettendo in evidenza la loro configurazione specifica in un contesto di livello sociale.

Più specificamente, gli autori avanzano le seguenti domande di ricerca: Come possono essere caratterizzate le pratiche di open social innovation in un contesto sociale per affrontare le sfide sociali? Come cambiano le pratiche tradizionali di innovazione aperta in un contesto multi-stakeholder in cui diversi attori provenienti da vari settori lavorano insieme in un'azione collettiva lungo il processo di innovazione sociale?

Metodologia della ricerca. Per rispondere alla domanda di ricerca dello studio, gli autori conducono un'analisi qualitativa completa di un caso studio di spicco di innovazione sociale aperta. Più specificamente, gli autori analizzano l'open social innovation generata da Isinnova, una società di consulenza e ricerca italiana specializzata in innovazione e sviluppo sostenibile che è stata globalmente riconosciuta come un caso di innovazione sociale di grande successo durante la crisi pandemica. L'analisi qualitativa è radicata su una vasta quantità di interviste, osservazioni, dati archivistici con Isinnova e la moltitudine di stakeholder coinvolti nel suo processo di innovazione sociale aperta.

Le informazioni sono state raccolte attraverso sei interviste dirette al team di Isinnova e ad altri stakeholder coinvolti nel processo di ricerca e sviluppo, triangolate con altre fonti di dati (Gibbert et al., 2008), come l'analisi di documenti archiviati, siti web, documentari e interviste video. I dati sui processi innovativi dell'azienda sono stati raccolti in più fasi tra il 24 aprile 2020 e marzo 2023.

Le interviste sono state selezionate utilizzando una strategia di "snowball sampling" (Patton, 1990). Le interviste sono state condotte in italiano tramite Skype e telefono cellulare, registrate e successivamente trascritte. Le interviste si sono concentrate sul processo di innovazione e sul ruolo di tutti gli attori coinvolti nello sviluppo dei nuovi prodotti.

Per quanto riguarda il protocollo di intervista, questo studio ha utilizzato una combinazione di approcci intervistativi di storia di vita (Atkinson, 1998, 2002) e interviste fenomenologiche (Thompson et al., 1989). Non sono stati utilizzati script predefiniti, consentendo alle domande di fluire naturalmente durante la conversazione, mirando ad acquisire la descrizione e l'interpretazione dell'evento di ricerca e sviluppo da parte del partecipante. L'adozione di interviste sulla storia di vita è un modo per sia l'intervistatore che il rispondente di "costruire insieme narrazione e significato" e quindi "rendere significativi eventi ed esperienze" (Riessman, 2008, p. 23), essendo partecipanti attivi nella narrazione. In questo senso, ogni partecipante ha raccontato le proprie storie in modi diversi, offrendo l'opportunità di esplorare in profondità il processo di innovazione sociale aperta e gli elementi che caratterizzano le pratiche di innovazione aperta applicate durante il processo.

I dati raccolti sono stati esaminati ed interpretati attraverso la tecnica dell'analisi del contenuto qualitativo, secondo il metodo proposto da Gioia et al. (2013). L'analisi del contenuto consente di interpretare i dati attraverso un processo in cui le interviste trascritte sono considerate come unità di analisi e vengono interpretate dai ricercatori. Il processo interpretativo richiesto non è strutturato né codificato. Pertanto, è necessario integrare questa tecnica con i criteri posti dalla metodologia di Gioia.

Secondo questi criteri, gli autori hanno analizzato individualmente le interviste al fine di identificare i principali temi emergenti e derivare i concetti di primo ordine. Quindi, a partire dalla multipla identificazione dei concetti di primo ordine, tutti gli autori hanno discusso e confrontato i loro schemi di codifica, per ottenere uno schema di primo ordine condiviso e unico.

Successivamente, gli autori hanno effettuato un'analisi di secondo ordine per identificare nuove categorie concettuali (temi di secondo ordine), ottenute dall'aggregazione "semantica" dei concetti di primo ordine. In questo passaggio, il processo iterativo tra teoria ed evidenza ha portato all'identificazione di alcune caratteristiche distintive delle pratiche di innovazione aperta in contesto sociale.

Infine, i temi di secondo ordine sono stati aggregati in dimensioni teoriche, a partire dall'identificazione di unità minime di significato dalle sotto-categorie di concetti identificate nel passaggio precedente.

Risultati. I nostri risultati hanno rivelato che l'adozione di pratiche di innovazione sociale aperta può essere estremamente vantaggiosa per affrontare le complesse problematiche che affliggono le società contemporanee.

In particolare, gli autori hanno identificato come le quattro pratiche chiave dell'open innovation si modificano in chiave sociale per perseguire soluzioni innovative per le sfide sociali.

Prima di tutto, le analisi hanno mostrato come durante periodi di crisi, come nel caso delle pandemie, la ricerca di informazioni esterne e fonti di innovazione diventa decentralizzata. Questo processo coinvolge non solo singoli attori, ma anche una vasta rete di stakeholder, promuovendo un approccio collaborativo e inclusivo alla risoluzione dei problemi (Chesbrough and Di Minin, 2014; Mair et al., 2023).

In secondo luogo, le analisi hanno mostrato l'importanza della flessibilità nell'utilizzo delle risorse esistenti e delle innovazioni. Durante periodi di crisi, l'agilità e la capacità di adattamento (Vesci et al., 2021; von Hippel, 1986) diventano fondamentali per rispondere prontamente alle esigenze emergenti e sfruttare al meglio le risorse disponibili.

Un'altra pratica chiave che viene modificata è la co-creazione di valore con le comunità. In questo contesto, il coinvolgimento attivo dei partner diventa essenziale per affrontare le sfide sociali in modo efficace. La collaborazione con una vasta gamma di attori, inclusi cittadini, organizzazioni non governative e settore privato, consente di sviluppare soluzioni innovative che rispondono alle esigenze reali della società.

Infine, le analisi evidenziano l'importanza di combinare i diritti di proprietà intellettuale con sistemi open source. Mentre la protezione della proprietà intellettuale può essere importante per garantire il successo e la sostenibilità delle innovazioni, abbiamo osservato che in certi contesti, come quello delle sfide sociali, il profitto economico può essere sacrificato a favore della risoluzione delle problematiche sociali (Cucino et al., 2023; Ferrigno and Cucino, 2021). Questo approccio mira a garantire che le soluzioni innovative siano accessibili e utilizzabili da un'ampia gamma di attori, riducendo al minimo il rischio di speculazioni e garantendo un impatto sociale positivo a lungo termine.

Complessivamente, i risultati confermano l'importanza e la rilevanza dell'open social innovation nel contesto delle sfide sociali. Queste pratiche non solo offrono soluzioni concrete ai problemi esistenti, ma promuovono anche la collaborazione, l'inclusione e la sostenibilità, contribuendo così a costruire una società più equa e resiliente.

Limiti della ricerca. *Nel delineare i limiti della ricerca, è essenziale considerare diversi aspetti che potrebbero influenzare la sua portata e la sua validità. In primo luogo, va sottolineata la questione della generalizzabilità dei risultati. Poiché gli autori si sono concentrati su un singolo caso studio, quello di Isinnova durante la pandemia da COVID-19, potrebbe esserci una limitazione nella capacità di estendere le conclusioni ad altri contesti con sfide sociali diverse e ambienti culturali variabili.*

Un altro punto da considerare riguarda il rischio di bias derivante dalla natura stessa di un caso studio, che potrebbe introdurre soggettività nell'interpretazione dei dati. È possibile che gli intervistati abbiano una visione limitata delle attività di Isinnova, influenzando così la rappresentazione dei processi di innovazione sociale aperta.

Inoltre, sebbene gli autori abbiano esaminato dettagliatamente il processo di open social innovation di Isinnova, non viene fatta un'analisi specifica sull'impatto sociale delle soluzioni sviluppate. Questo potrebbe rappresentare un limite nella valutazione degli effetti reali delle pratiche di innovazione sociale aperta sulle comunità e sulla società nel suo complesso. In conclusione, affrontare questi limiti potrebbe arricchire ulteriormente la nostra comprensione dell'innovazione sociale aperta e del suo impatto sulle sfide sociali, consentendo una prospettiva più approfondita e completa sull'argomento.

Implicazioni manageriali *Ci sono almeno cinque lezioni pratiche da trarre dal caso di Isinnova in una situazione di sfida globale come la pandemia da Covid-19, le quali possono rivelarsi preziose per affrontare future crisi. In primo luogo, l'innovazione sociale aperta ha mobilitato le conoscenze di un vasto esercito volontario di attori provenienti da vari settori, discipline, luoghi e campi, promuovendo l'apprendimento e accelerando il progresso contro la malattia. In un contesto di emergenza futura, un approccio aperto si rivela l'unica via per abbracciare rapidamente e proattivamente gli stimoli all'innovazione generati da una crisi.*

In secondo luogo, il successo di un'azienda dipende dalla scelta dei partner giusti e dalla corretta combinazione di competenze interdisciplinari. I numerosi partner con cui Isinnova ha collaborato sono stati un elemento fondamentale per la creazione e, soprattutto, la diffusione dell'innovazione. Questa esperienza dimostra che, in un contesto di crisi, collaborare con i partner adeguati è più critico che mai per accedere alle conoscenze necessarie e sviluppare rapidamente nuove innovazioni.

In terzo luogo, il concetto di brevetto non riguarda esclusivamente il profitto economico. In situazioni di grave emergenza, i profitti finanziari devono essere messi da parte poiché altre necessità, come il contributo alla comunità, assumono la massima priorità. Isinnova ha reso disponibili i propri progetti come open source per garantire che la sua innovazione potesse raggiungere il maggior numero possibile di operatori, consentendo la produzione di valvole non solo in Italia, ma anche all'estero. Le aziende devono pertanto valutare attentamente le pratiche di protezione della proprietà intellettuale, riconoscendo che il brevetto è uno strumento per proteggersi da possibili abusi da parte di terzi, ma non rappresenta necessariamente il mezzo principale per trarre profitto da una propria invenzione.

In quarto luogo, la mobilitazione di attori e risorse è un fattore chiave nel gestire situazioni di crisi e offrire soluzioni innovative efficaci e ad alto impatto. È infatti attraverso un appello sul proprio sito web che l'azione benefica di Isinnova ha ottenuto risonanza mediatica e ha coinvolto il maggior numero possibile di attori per affrontare l'emergenza da Covid-19. Le aziende devono pertanto considerare che, in situazioni di crisi, gli attori che compongono il sistema economico di un paese sono più sensibili alle esigenze della società e si mobilitano per affrontare questa necessità urgente.

Infine, tralasciando i casi piuttosto rari in cui l'innovazione sociale è guidata da organizzazioni pubbliche con aperture verso l'esterno, l'innovazione sociale implica generalmente un processo molto più radicato e decentralizzato. Di conseguenza, sono necessari strumenti adeguati perché l'innovazione sociale aperta possa avere luogo. Ad esempio, le tecnologie digitali sono potenti abilitatori, ma sono spesso necessarie anche risorse tangibili. In tal senso, Bria et al. (2015) sottolineano che mentre le soluzioni digitali sono molto utili per risolvere sfide sociali, la prossima fase dell'innovazione sociale digitale probabilmente si baserà fortemente sull'uso di makerspaces, fab labs e altri spazi collaborativi, poiché questi ambienti ampliano ulteriormente lo spettro di innovazione sociale reso possibile dalle tecnologie digitali.

In conclusione, l'innovazione sociale aperta facilita l'identificazione e la comprensione delle sfide della società attraverso un ciclo virtuoso di interazioni con vari attori che condividono la necessità di contribuire alla società. I cittadini possono trovare soluzioni insieme alle amministrazioni pubbliche e ad altre persone e istituzioni rilevanti se entrambe le parti portano all'attenzione del tavolo apertura, competenze e risorse necessarie.

Originalità del paper. Lo studio ha diversi elementi di originalità che alla comprensione dell'innovazione sociale aperta e del suo impatto sulle sfide della società contemporanea. In primo luogo, gli autori hanno individuato e analizzato pratiche di open social innovation che si distinguono dalle tradizionali strategie di innovazione. Questo aspetto è significativo poiché spesso mancava una comprensione approfondita di come l'innovazione aperta potesse essere applicata efficacemente per risolvere problemi sociali.

Secondo, Isinnova è stata frequentemente esaminata da studi precedenti (Corsini et al., 2021; Ferrigno & Cucino, 2021; Tani et al., 2022; Vesci et al., 2021). Alcuni di essi hanno fornito contributi significativi investigando sull'innovazione frugale in una situazione di crisi (Corsini et al., 2021; Vesci et al., 2021); altri hanno analizzato azioni di innovazione mirate (Ferrigno & Cucino, 2021). Tuttavia, presi nel loro insieme, questi studi hanno principalmente discusso del ruolo di Isinnova durante un contesto di crisi e dal punto di vista dell'azienda. Al contrario, in questo articolo viene fornita un'analisi ben documentata delle pratiche di open social innovation implementate dall'azienda e dai suoi principali stakeholder anche dopo il contesto di crisi.

Infine, gli autori hanno fornito indicazioni pratiche per manager e decisori politici. Le nostre offrono utili linee guida su come sviluppare strategie e politiche per affrontare le sfide sociali attraverso l'innovazione aperta, rendendo il lavoro rilevante non solo a livello accademico, ma anche operativo per coloro che devono prendere decisioni manageriali e politiche.

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Track 8
Retailing & Service Management

The effect of entrepreneurial and customer orientations on shopper loyalty: an explorative study on small independent retailers

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Abstract

Small independent retailers play a pivotal role in the Italian economy, and in recent years they have had to compete with larger firms. This study aims to delve into these dynamics, investigating how independent small retailers manage to survive the larger giants. To this end, 15 in-depth interviews were conducted on small independent retailers operating in five Italian large cities. Authors investigated the role of Entrepreneurial Orientation (EO), Customer Orientation (CO), Shopper Loyalty and their social role in city centers and neighborhoods. The value of this manuscript lies in its exploration of the relationships emerged among constructs and highlights their influence on competitiveness, adding a valuable perspective to previous literature. From the study, it emerged that retailers are searching for new solutions to compete and to better satisfy their customers. This is possible due to high levels of EO serving as a stimulus for sustained strategic and marketing responses.

Keywords: *Small retailers, SME, entrepreneurial orientation, business model innovation, external competition, innovativeness and proactiveness.*

Framing of the research. *Small and medium-sized enterprises (SMEs) are instrumental in shaping the economic landscape of Europe, making significant contributions to job creation, wealth generation, innovation, and overall economic progress. In Italy, independent small retail businesses not only play a pivotal role in job creation and value addition but also have a positive impact on local economies and social cohesion in urban centers. Nevertheless, the ongoing crisis faced by small retailers, fueled by external competition from large shopping malls and e-commerce, presents a palpable threat to the social fabric of cities. The potential closure of these local businesses, acting as vital community hubs, could elicit feelings of decline and insecurity among citizens.*

Indeed, as highlighted by McDonald and Swinney (2019), small independent retailing firms play a crucial role, especially when fulfilling social functions. The recent pandemic has emphasized the importance of small local stores in providing social services to residents, including personalized services and home delivery. The proximity of these small stores to residents brings added value to a diverse range of consumers, particularly benefiting those facing disadvantages, such as the elderly and low-income families. Furthermore, small independent retail stores act as focal points for social interaction, as noted by Clarke and Banga (2010). Gilboa et al. (2019) argue that the social relationships and personalized attention offered by small shops are integral components of the customer experience.

The relational aspects inherent in small independent retailing firms confer competitive advantages (Pantano and Migliarese, 2014). Viewed in a broader context, the competitive pressures exerted by external malls and e-commerce pose a threat not only to the city center retailing system but also to the vitality of the neighborhood. Barata-Salgueiro (2021) posits that the presence of scattered small independent retailing firms in cities serves as a defense against desertification and insecurity. Additionally, it contributes to the appreciation of community identity (Runyan et al., 2007). In this study, we delve into four crucial dimensions concerning small businesses: specifically, we explore the role of Entrepreneurial Orientation (EO) in not only fostering Strategic Orientation (SO) and customer orientation (CO) but also in shaping their social impact within neighborhoods and city centers. EO, defined as the entrepreneur's inclination to cultivate market opportunities through continuous innovation, a proactive stance, and a willingness to take risks in pursuing new opportunities (Lumpkin & Dess, 1996; Covin & Slevin, 1989), serves as a focal point of our analysis. Griffin et al. (2006) discovered that EO in the retailing sector positively influences the development of knowledge resources

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geared towards constructing a competitive advantage. Grewal and Levy (2017) argued that EO contributes to enhancing competitiveness in retailing. Luiz dos Santos and Vieira Marinho (2018) delved into the correlation between EO in supermarket retailers and their Strategic Orientation, validating a positive relationship. In Addition, considering that small retailers are likely to implement strategies based on their specific role for customers and the local community, other approaches may be applied to analyze strategic paths related to the external environment.

The strategic orientation framework includes the characteristics of the Strategic Orientation towards customers, competitors, and other external forces and helps to understand how firms respond differently to the evolution of the competitive environment (Ferraresi et al., 2012). Miles & Snow (1978) define a classification of different typologies of strategic postures that lead to different Strategic Orientations (SO). This classification is especially useful for small and entrepreneurial businesses (Rugman & Verbeke, 1988). It categorizes firms into four types: prospectors, analyzers, defenders, and reactors (Anwar & Hasnu, 2017). Moreover, prioritizing Customer Orientation (CO) stands as a pivotal marketing strategy that enables companies to generate value for customers by comprehending their stated desires and needs (Narver and Slater, 1994). Within the retail sector, fulfilling customers' needs emerges as a crucial determinant of success, enhancing the company's overall performance and competitive standing (Tajeddini et al., 2013). It's crucial to underscore that the development of CO should adopt a forward-looking approach, anticipating the future needs and desires of customers. In this context, successful businesses need an elevated level of Entrepreneurial Orientation (EO). This encompasses elements such as social relationships, social affiliation, reciprocity, and a sense of community attachment. This connection is closely related to the themes of sustainability and social responsibility among small retailers, especially when these businesses serve societal functions (McDonald and Swinney, 2019). Consequently, the bond between customer support and the dedication of small retailers to their neighborhood and local community is robust.

Purpose of the paper. The purpose of this study is to investigate how small independent retailers manage to survive the larger giants and e-commerce. Beginning with an overview of profiles associated with small retailers, focusing on literature concerning small consumer services and retailing, our empirical research delves into the influence of Entrepreneurial Orientation (EO) on vital strategic elements for small independent retailing. These elements include Strategic Orientation (SO), and customer orientation (CO) - encompassing aspects like shopper loyalty, and sustainability. We consider that these research streams (Runyan and Droge, 2008) may help to understand the source of competitive advantage of small independent retailing firms. Based on these premises, our research questions are:

RQ1: What are the main features of the orientations adopted in small retailing?

RQ2: What are the entrepreneurial factors that help small shops to challenge the big player/e-commerce competition?

To address our research questions, we are conducting a comprehensive multiple-case study focused on small independent retailing firms. The deliberate choice of these firms stems from the widespread recognition of small retailing as a crucial economic activity. Small firms, often led by entrepreneurs and founders, frequently from the same family, exhibit a distinct leadership style that significantly shapes their approach to innovation and market dynamics (Penco et al., 2022). The main goal of this in-depth investigation is to analyze the dynamics and evolving strategies of small independent retailers. Our examination delves into their strategic orientations and underscores the pivotal role they play in establishing and sustaining customer relationships. The study seeks to assess how Entrepreneurial Orientation (EO) can strategically cultivate robust customer relationships while upholding quality and tradition. Employing a multiple case study approach, the research follows methodologies outlined by Cunningham (1997), Eisenhardt & Graebner (2007), Eisenhardt (1989), Pratt (2009), and Yin (1994). Additionally, the study aims to contribute to and deepen existing literature on EO, Strategic Orientation (SO), Customer Orientation (CO), shopper loyalty, and sustainability through concrete case studies (Eisenhardt, 1989; Eisenhardt & Graebner, 2007). The chosen approach, aligning with Eisenhardt's (1989) framework, allows for the integration of various constructs, establishing meaningful connections between them (Gehman et al., 2018).

Methodology. The research employs a qualitative approach, utilizing semi-structured in-depth interviews consisting of 26 questions. We engaged in these interviews with the owners or managers of 15 companies operating in diverse sectors, such as clothing and accessories, restaurants, home and furniture, and entertainment. The decision to focus on these specific businesses is driven by their significant impact on the Italian economy. The selected companies meet specific criteria: they are located in five major Italian cities, are classified as SMEs based on turnover and number of employees, and are recognized as small, reputable, and benchmark retailers within their local communities. Notably, all but one of the cases examined were family businesses, with entrepreneurs assuming leadership roles. The semi-structured interviews were conducted between March 2023 and April 2023. We scheduled appointments via email and phone calls with interested enterprises identified during a pre-screening phase. The actual representatives interviewed included entrepreneurs, family members involved in enterprise governance, or top managers (in one case only). Brief profiles of the interviewees and main characteristics are summarized in Table 1.

Table 1- Respondent profiles and interview characteristics

<i>No./interview code</i>	<i>Company Type</i>	<i>Interview period</i>	<i>Interviewees role</i>	<i>City</i>
H01	Patisserie/Bakery	23/03/2023	Family member	Roma
H02	Bookstore	23/03/2023	Business owner	Roma
H03	Gadgets	03/04/2023	Business owner	Roma
H04	Coffee shop and gourmet products	30/03/2023	Management Assistant	Venezia
H05	Design	30/03/2023	Business owner	Venezia
H06	Jewelry	30/03/2023	Business owner	Venezia
H07	Accessories	22/03/2023	Business owner	Napoli
H08	Optician	06/04/2023	Business owner	Napoli
H09	Pizzeria	22/03/2023	Business owner	Napoli
H10	Jewelry	12/04/2023	Business owner	Milano
H11	Hardware	12/04/2023	Business owner	Milano
H12	Clothing	07/04/2023	Business owner	Milano
H13	Patisserie	21/04/2023	Business owner	Milano
H14	Restaurant	07/03/2023	Business owner	Firenze
H15	Gastronomy and restaurant	11/04/2023	Business owner	Firenze

Source: Authors' elaboration

The interviews were audio-recorded, transcribed, and translated from Italian to English. The open coding practice was performed. This method is suitable for the study of complex phenomena through the coding of labels, concepts, and words (Penco et al. 2022). Interviews were codified through textual analysis. They were independently codified by each author and were discussed together to reduce subjectivity in interpretation of the data. Each construct (entrepreneurial orientation, Strategic Orientation, consumer orientation, shopper loyalty, and sustainability) was then evaluated. The purpose of the evaluation phase was to identify the level of engagement with respect to the analyzed factor. Thus, it was possible to distinguish retailers in which the orientation/construct was absent or very weak, from situations where construct/factors were ready to be adopted/implemented. Additionally, the analysis revealed firms that show great involvement in the analyzed orientations/constructs.

Results. The analysis highlights that the key to success lies in the quality of products and services, fostering customer loyalty. The connection between quality, customer satisfaction, and store loyalty has long been a subject of debate in small retailers' literature. Examining the business model of the studied small retailers reveals a prominent emphasis on tradition, despite the industry's general pursuit of innovation. This aligns with findings from prior studies (Cuesta-Valino et al., 2022) that establish a link between tradition and retailers' success. Our analysis affirms how tradition influences the emotional atmosphere within the point of sale (Morhart et al., 2016). Interestingly, while tradition remains pivotal, many small retailers, especially those established more recently, are actively working to incorporate innovative elements into their business models. Expanding the analysis to the retailing mix, key factors include positioning/image, assortment, merchandising, and store ambiance. These aspects prove crucial for businesses, allowing them to showcase their uniqueness and stand out against larger competitors. For the topic of branded products/merchandising, interviews suggest that merchandising doesn't exert a direct strategic impact on the performance of small retailers. However, the results enable the identification of connections between different constructs (EO, SO, CO, shopper loyalty, and sustainability) and their influence on competitiveness (Kajalo & Lindblom, 2015).

In particular, the overall average Entrepreneurial Orientation (EO) propensity is notably strong, particularly in the dimensions of innovativeness and proactiveness. Risk-taking propensity, although inherent in entrepreneurial activities, tends to rate lower than the other two dimensions in all samples. The study indicates that innovativeness and proactiveness are prominent entrepreneurial characteristics, with risk-taking playing a facilitating role, sometimes indirectly, and consequently influencing the preceding constructs. Therefore, the analysis suggests that higher propensities toward innovativeness and proactivity correspond to higher EO levels (Anwar & Hasnu, 2017). Conversely, lower propensities toward innovativeness result in lower EO levels, except in terms of digitalization and the use of social media for business communication.

Moreover, in the analysis of the Strategic Orientation (SO) construct, the study reveals a common trend among small distributors to adopt a defined SO across three distinct dimensions: Analyze, Defend, and Prospect, with the React dimension appearing less actively pursued. Examining SO further unveils a connection with different orientations of Entrepreneurial Orientation (EO). Specifically, entrepreneurs emphasizing innovativeness and proactivity demonstrate a prospective SO. An analytical SO primarily revolves around proactivity, where surveyed independent small retailers

analyze the market to introduce adaptable products in response to shifting demands. Conversely, lower levels of innovativeness align with a reactive SO, where retailers aim to maintain product stability without significant alterations.

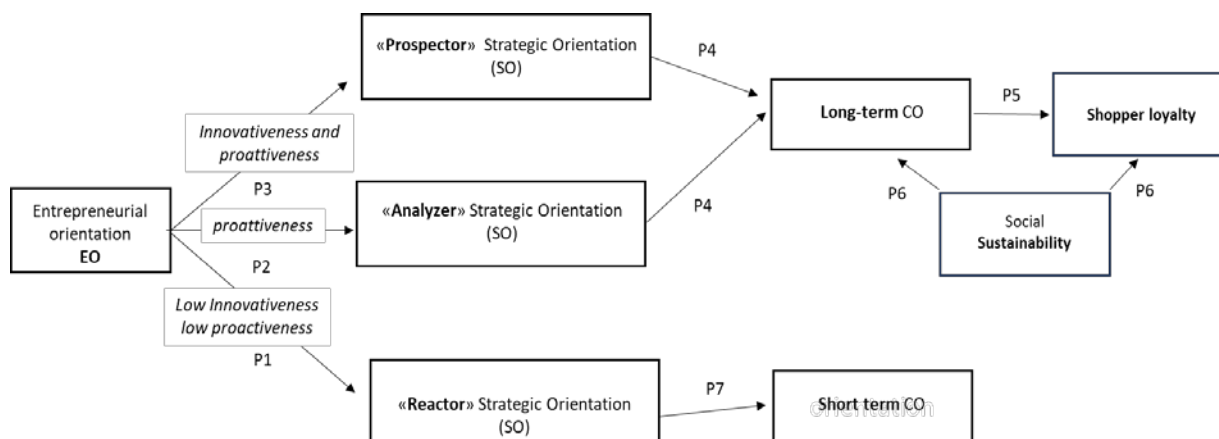
In addition, our research shows that the customer orientation of small retailers is a basic element to constitute a competitive advantage with which they can diversify against larger competitors. All retailers in the sample report a high relevance of the customer relationship, especially through the offer of highly personalized services, capable of generating high customer satisfaction. The analysis shows how retailers can bring their business to long-term profitability through their attention to the customer by creating quality products and services (Deshpandé et al., 1993). However, Customer Orientation (CO) truly becomes significant in the long term only when influenced by high levels of Entrepreneurial Orientation (EO) and Strategic Orientation (SO). To gain a comprehensive understanding of the success and effectiveness of customer orientation (CO), it is essential to closely link CO with the embedded innovativeness and proactiveness within the organizational culture of retailers, as emphasized by Deshpande et al. (1993). This implies that organizations cultivating a corporate culture inclined toward innovation and proactivity, indicative of a high Entrepreneurial Orientation (EO), are more likely to exhibit outstanding customer attention, as also indicated by Tajeddini et al. (2010). The research also reveals a very relevant role of shopper loyalty. In particular, each activity is oriented towards the customer experience, considered as the total of the subjective judgments derived from the satisfaction obtained by the customer during the shopping phase and on which the choice of the shop is based (Paul et al., 2016). Additionally, the study reveals that salespeople in small shops are highly motivated to cultivate relationships with their customers, resulting in a positive correlation between shop attachment and shopper loyalty (Badrinarayanan & Becerra, 2019). Thus, the conducted analysis establishes a clear relationship between consumer orientation and shopper loyalty.

Finally, from our study, it emerges that the relationship with the society and community in which the small retailers are established is a determining factor for their image and reputation, even if it is not yet a fully developed factor. Many studies agree with this perspective; physical stores need to put more emphasis on "soft values" (Ekstrom & Jonsson, 2022). This research also shows that small shops are still very important in quarters, especially if they provide functions for society.

In summary, when Entrepreneurial Orientation (EO) is high, Strategic Orientation (SO) tends to be either Prospector or Analyzer. Both types of orientations, Prospector and Analyzer, prioritize investing in Customer Orientation (CO) with a long-term perspective to anticipate future customer needs and desires. This finding supports existing literature indicating that a strong EO, particularly in terms of innovativeness and proactiveness, encourages businesses to explore the gap between current and future market needs (Smith and Jambulingam, 2018). The study also highlights that a long-term CO positively influences shopper loyalty. Moreover, social sustainability emerges as a dual factor: it not only enhances CO by aligning businesses with social and ethical values, appealing to socially conscious consumers but also stimulates shopper loyalty by emphasizing the social role of small retailing in the local community.

- P1: Small retailers with a low level of innovativeness and proactiveness are likely to be defined with a Reactor for SO.
- P2: Small retailers with EO based on proactiveness are likely to adopt an Analyzer SO.
- P3: Small retailers with EO based on innovativeness and proactiveness are likely to adopt a Prospector SO.
- P4: Small retailers with high EO that are analyzers and prospector are likely to adopt more quickly to market needs and construct a long-term CO.
- P5: Consumer orientation impact on shopper loyalty
- P6: Social Sustainability influences shopper loyalty and customer orientation
- P7: Small retailers with low EO that are reactor are likely to adopt more slowly to market needs and construct a short-term CO.

Figure 2: summary of results



Source: Authors' elaboration

Research limitations: *This study considers a limited sample size, counting only 15 small independents. Secondly, the study was cross-sectional, and it would be beneficial to conduct a longitudinal study to extract trends and strategic evolutions over time. Additionally, the study included a limited number of variables, and an analysis of other aspects such as the entrepreneur's personal traits and cultural background is crucial to better understand the antecedents of the strategic and entrepreneurial attitude.*

Managerial Implications: *These findings carry noteworthy implications for both practitioners and researchers. Firstly, our study contributes to the literature on small consumer services and retailing entrepreneurs, providing valuable insights into the application of strategic tools for creating customer value and ensuring the long-term survival of small independent retailing firms. Secondly, it extends the scope of entrepreneurship and marketing literature by offering a model that explains strategic behaviors and identifies the factors contributing to the success of entrepreneurs in small independent retailing. Few studies have applied Entrepreneurial Orientation (EO) to interpret strategic behaviors in small retailing, and this research fills a crucial gap by highlighting the significant role of EO in shaping the strategic and marketing responses of small retailing businesses. Importantly, our analysis underscores that EO plays a pivotal role in adopting a prospector orientation. The centrality of EO, particularly in fostering innovativeness, proves essential for the competitive resilience of small independent retailing firms against larger counterparts. Therefore, actively nurturing EO and aligning human resource management with this entrepreneurial mindset is imperative. Establishing clear communication channels regarding the strategic importance of EO is vital for steering a trajectory marked by innovativeness, a proactive Strategic Orientation, and a strong emphasis on customer relationships. Taking a mid-level perspective, this study advocates for proactive investment from local policymakers to protect and strengthen small independent retailing businesses. Practical measures include initiatives to enhance the local environment, support for local projects like city branding, and a cautious approach to investments in large malls situated near local centers. Expanding the view to a broader, national level, the government and relevant ministries are encouraged to facilitate the efforts of small independent retailing entrepreneurs. This involves simplifying bureaucratic processes, introducing fiscal incentives that support local activities, and directing investments toward research programs and training courses. Establishing specialized agencies to identify and capitalize on significant opportunities for small retailers is a recommended strategy for promoting their sustained growth and competitiveness.*

Originality of the paper: *Analyzing the relationship between EO, SO, CO, shopper loyalty, and social sustainability in small independent retailers, with the aim also to understand how they can survive the competition with major stores, is relevant from a strategic perspective. We contribute to this topic by pointing out the crucial role of EO and pointing out that the investigated small retailers did not only focus their attention on the survival phase but also searched for new solutions to compete and to better satisfy their customers, creating a strong relationship focused on trust and loyalty.*

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Ensuring customer satisfaction and loyalty of online health and well-being: a comparison study across types of services

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Abstract

Online offering of services for health, wellness and well-being has rapidly increased in latest years, leading to a variety of services of different nature being offered and communicated across multiple touchpoints. Such complexity is reflected in a multitude of studies addressing customer satisfaction and customer loyalty by focusing on specific online service delivery contexts. Drawing from literature on e-service quality, online health service provision, and healthcare and well-being professionals as service providers, our study aims to shed light on the role of various aspects affect customer satisfaction and customer loyalty across types of services offered. A model is proposed, combining both e-service offering-related elements and provider-related elements with variables accounting for touchpoints encountered during the customer's journey, to investigate the latter's effects on customers' evaluations of the service. Data were collected through an online survey of 1,220 Italian customers. Significant differences are found, across types of services, with reference to factors attributable to both elements, and to touchpoints at different stages of the journey.

Key words: *online services; health; well-being; customer satisfaction; customer loyalty; touchpoints*

Framing of the research. *Online-based systems have increasingly populated the market for health and well-being services, thus transitioning from a traditional physician-based or provider-based delivery model. Such evolution, that has rapidly increased since the pandemic hit (Zhu et al., 2024), has brought customers many newfound advancements, such as the possibility to receive treatment and care at a distance (Dahl et al., 2019). Also, the availability of multiple platforms and touchpoints dedicated are allowing customers to take greater control of their care decisions prior to and during the service encounter (Labrecque et al., 2013). Various studies have therefore been developed, in latest years, addressing these online services' potential in influencing customers' behaviors and attitudes (e.g. electronic Word-of-Mouth and continued use of the abilitating technology - Yang et al., 2015; patients' relationship with and trust in their physician – Audrain-Pontevia and Menvielle, 2018). Current literature with this respect is of interdisciplinary nature, and has been developed within the fields of medical sciences, motor sciences, psychology, as well as marketing and management; and as such have addressed a wide range of services, from telemedicine to nutritional consultancy to physical wellbeing interventions. The present study intervenes in this literature by addressing the generation of customer satisfaction and loyalty by comparing a variety of online services that fall under the umbrella of “health and well-being services”.*

Purpose of the paper. *The present study investigates factors driving customer satisfaction and customer loyalty concerning digital services for health and well-being. On the one hand, the paper aims to weight various aspects concerning services provided online with those concerning the healthcare professional delivering the services. We pose, in fact, that both aspects must be accounted for at once when addressing health and well-being services. On the other hand, the paper aims to identify whether the various touchpoints that constitute customer journeys when purchasing health and well-being services online. The introduction of touchpoints as variables within the study is oriented at achieving a deeper understanding of how these contextual elements determine customer satisfaction by acting as signals throughout the journey. Moreover, it allows to differentiate between various contexts through which the service is delivered, each with a diverse degree of interaction and integration (e.g. from purely informational websites to mobile apps, from social media to video-call and communication interfaces).*

Two research questions are formulated as follows:

- *RQ1: Identify which elements related to e-service offering delivery and related to the provider have an effect on customer satisfaction and loyalty intentions, in the context of digital health and well-being services;*

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- *RQ2: Shed light on the role of touchpoints in affecting customer evaluation of e-service offering-related elements and provider-related elements, as far as digital health and well-being services are concerned.*

To achieve the study's goals, current literature on e-services quality, digital health and well-being services, customer satisfaction and customer loyalty has been reviewed, leading to the identification of a model to be tested.

The model is proposed as follows (see Figure 1):

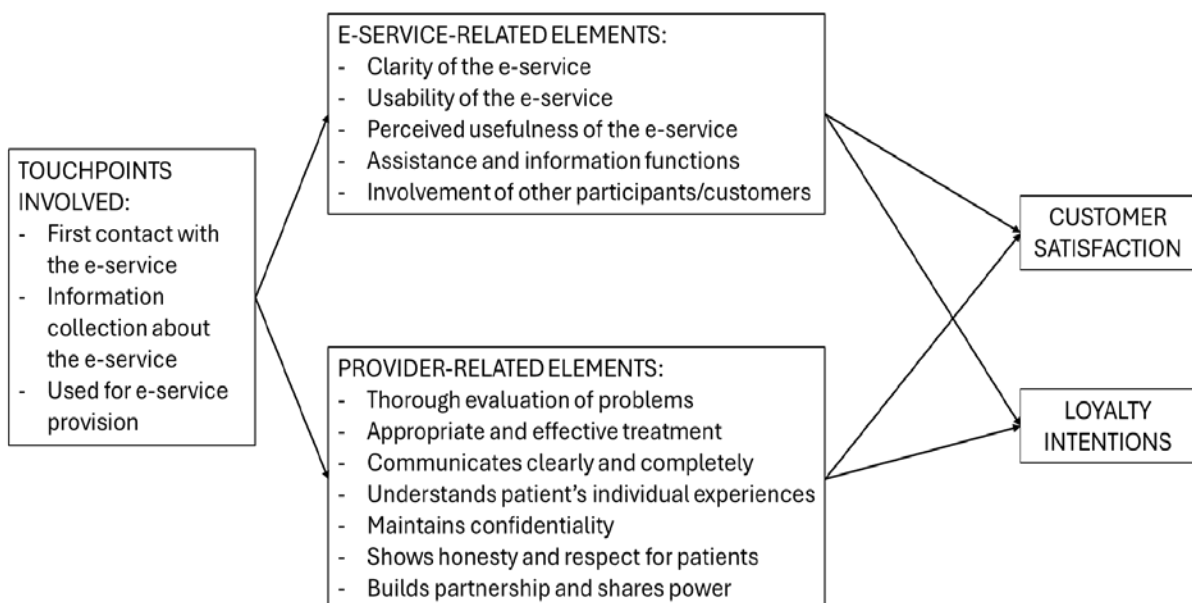
- Touchpoints involved: three blocks of touchpoints were identified, to account for a) those through which the first contact with the service occurred; b) those used by the customer to gather information about the service; c) those through which the service has been provided.

Three lists of touchpoints have been identified on behalf of previous literature (e.g. Swan et al., 2018) as well as from practice. As what concerns first contact and information collection touchpoints, we ensured to include both provider-owned touchpoints and third-party touchpoints (either one-way or interactive) (Baxendale et al., 2015). Customers not only collect providers' own information, but also access other users' shared information about the service and the provider, which contribute to creating their expectations (Kitsios et al., 2019). Because of this, we expect that touchpoints encountered will have an effect on customers' actual evaluation on both the elements related to the e-service offering and those related to the provider.

- E-service offering-related elements: 5 aspects have been found as crucial in determining a response from customers, by comparing multiple studies on health and well-being services, especially those focusing on the online dimensions of service provision. Both the "clarity" and the "assistance and information functions" elements concerned the service delivering reliable, trustworthy, understandable information and/or allowing customers to receive assistance in case of doubts or misunderstanding (Chang et al., 2015). The "usability / ease-of-use" element referred to the user experience the customer has while navigating the online touchpoint through which the service is delivered (Gummerus et al., 2004). The contribution to the service by other participants was introduced to assess all those contexts and situations where multiple customers at once contribute to the service experience under evaluation, such as group classes or therapy sessions (Brouzos et al., 2021). Finally, perceived usefulness of the service was adopted to measure the structural and design-oriented dimension of the service (Kitsios et al., 2019).

- Provider-related elements: similarly to e-service offering-related elements, 7 aspects concerning the provider delivering the health and well-being service have been identified. Interestingly, it emerged from current literature that aspects concerning healthcare professionals, psychologists and physicians do not greatly differ between studies developed in the online or offline sectors, thus stressing the importance of the human element in all service contexts. Following Leisen and Hyman (2004) and subsequent adaptations, the elements chosen - thorough evaluation of problems, appropriate and effective treatment, clear and complete communication, understanding of patient's individual experiences, confidentiality, honesty and respect for the patient, partnership building and power sharing – are able to cover both the benevolence and technical competence dimensions of patient-provider trust.

Figure 1 – Proposed model



Methodology. Data were gathered by means of an online survey conducted on a sample of 1,411 Italian consumers, between the months of March and May 2023. Given the sensitivity of some of the services investigated, we adopted a CAWI methodologies, with research assistants being available to help overcome any uncertainty or questions. Sampling was based on probabilistic methods, through stratified sampling (by age, gender and residence) on the list of e-panelists.

The questionnaire was composed of three sections. The first one, of a descriptive nature, was used to draw a comprehensive profile of participants and ensure the maximum representativeness of the sample. The second section addressed the search and selection process customers went through before purchasing the online service for health and well-being, including the main touchpoint through which they became aware of the service, the main touchpoint used to gather information about the service, and whether there had been previous experiences – either offline or online – with the service. Moreover, consumers were asked to disclose whether they reviewed the service publicly, privately, or they didn't share at all. The third and final section of the questionnaire involved evaluating their satisfaction over the service for health and well-being, both overall and in detail. 5 factors were used to investigate the delivery aspects of the online service (Brouzos et al., 2021; Chang et al., 2015; Kitsios et al., 2019), and 7 factors to assess aspects concerning the provider / professional delivering said service (adapted from Leisen and Hyman, 2004). Finally, a 3-item scale was used to assess loyalty intentions, measuring loyalty of behavioral nature (Murshed et al., 2023, adapted from Johnson et al., 2006). Reliability and validity of constructs and items was assessed through internal consistency and composite reliability (Nunnally, 1994) as well as factor loadings (Gerbing and Anderson, 1988).

Only consumers who purchased at least one online service for health and well-being in the last year were allowed to proceed in the survey (1,302). Those who purchased more than one of these services were asked to focus on the service they deemed as most relevant for them before answering further questions. Participants were provided with a list of 7 types of online services for health and well-being, that was created based on previous literature and cases from practice. The list was discussed and validated by researchers, also following a pre-test of the questionnaire conducted on 90 students. Following data cleaning based on completeness, attention checks and compilation time, 1,220 questionnaires were deemed valid and analyzed. The final sample included 42% men and 58% women. As for age, most participants were in the "18-29" age bracket (74%); the other participants were equally distributed in the "30-39", "40-49", "50-59" and "60-69" age ranges. The research did not distinguish by gender or age, but both variables were controlled for.

Data were analyzed through multiple linear Ordinary Least Squares (OLS) regression models. The method was chosen in line with previous studies on touchpoints, that employ regression and model touchpoints as dummy variables (e.g. Baxendale et al., 2015). Demographic variables of gender and age were used as controls when running the model, alongside other control variables that we hypothesized could influence customer satisfaction and/or customer loyalty: specifically, other analogous digital services being purchased, previous experiences with the service (online or offline), and customers still using the service at the time of survey completion. On the one hand, previous purchases can affect customers' response to any direct or indirect contact with the service itself or with its provider (McColl-Kennedy et al., 2015); on the other hand, customer satisfaction is expressed and measured as referred to a certain point in time along the process of service delivery (Danaher and Mattsson, 1994).

Results. The model was first tested on the entire sample (1,220), regardless of the type of service, to assess the impact of the three variables investigated on the two dependent variables, customer satisfaction and loyalty intentions.

Results will be presented starting from RQ1, which concerns the relationship between e-service-related elements, provider-related elements and customer satisfaction and loyalty intentions as dependent variables.

First of all, we confirm that overall e-service-related elements and provider-related elements have been found to have a positive impact on both customer satisfaction (respectively: $\beta = .629$, $p = 0.000$, and $\beta = .203$, $p = 0.000$) and loyalty intentions (respectively: $\beta = .726$, $p = 0.000$, and $\beta = .471$, $p = 0.000$). As what concerns each investigated aspect, we found that:

- clarity of the service, usability of the service, assistance and information functions, and perceived usefulness of the service are positively related to customer satisfaction.
- clarity of the service, perceived usefulness of the service, and the eventual involvement of other participants are positively related to loyalty intentions.
- providers' appropriate and effective treatment and confidentiality are positively related to customer satisfaction.
- provider's thorough evaluation of problems, appropriate and effective treatment, the understanding of the patient's individual experiences and the display of honesty and respect are positively related to loyalty intentions.

Table 1 provides the detail of these measures. To ensure readability of results, only significant values are shown.

Interestingly, control variables were not significant in affecting these relationships, with a single exception.

Overall, the number of digital services for health and well-being purchased in a year and whether there had been previous experiences with such services (either online or offline) does not affect neither customer satisfaction nor loyalty intentions. Whether the service was still being provided or not at the time of survey completion did not hold an effect on customer satisfaction, but it did on loyalty intentions; specifically, those who were still using the service when they answered the survey had more positive loyalty intentions than those who weren't ($\beta = .141$, $p = 0.006$).

Table 1 - Effects of e-service offering elements and provider elements on customer satisfaction and customer loyalty

Variables	Regression Beta Coefficients	Stand. Regr. Beta Coefficients	t-values	P > t
Customer Satisfaction				
SERVICE ELEMENTS				
Clarity	.120	.129	3.05	.002
Usability	.096	.105	1.67	.008
Assistance / inform. Functions	.070	.079	1.98	.048
Perceived usefulness	.159	.173	3.90	.000
PROVIDER ELEMENTS				
Appropriate and effective treatment	.166	.178	3.93	.000
Maintains confidentiality	.061	.075	2.01	.045
Loyalty Intentions				
SERVICE ELEMENTS				
Clarity	.116	.104	3.31	.001
Perceived usefulness	.193	.175	5.32	.000
Involvement of other participants	.085	.084	3.02	.003
PROVIDER ELEMENTS				
Thorough evaluation of problems	.125	.120	3.57	.000
Appropriate and effective treatment	.149	.134	3.98	.000
Understanding of patient's individual experiences	.108	.103	3.33	.001
Honesty and respect for the patient	.169	.142	4.41	.000

We subsequently decided to break down the model to each of the 7 types of online services for health and well-being investigated. In the previous analysis, a control dummy variable indicating the type of service participants responded for was barely significant ($p = 0.10$), which encouraged us to further investigate specificities across services. Answers obtained per each type of service were as follows:

- 56 about family well-being services (i.e. involving parents-children, couples, etc.);
- 541 about physical well-being services (e.g. nutrition, fitness, etc.);
- 146 about psycho-physical well-being services (e.g. yoga, pilates, etc.);
- 79 about mental well-being services (e.g. self-esteem improvement);
- 36 about social well-being services (e.g. feeling at ease with others);
- 171 about medical services – either general or specialist – provided by medical or paramedical staff;
- 191 about services for mental and psychological health (e.g. anxiety, panic attacks, anger management, etc.)

Due to the size of each sub-sample, we were able to run in-depth analyses about 5 out of 7 service types: physical well-being services; psycho-physical well-being services; mental well-being services; medical services – either general or specialist; and services for mental and psychological health.

Table 2 shows and compares the results obtain for each of the 5 service types; again, to improve the readability, only significant results are presented, with standardized beta coefficients. Besides differences specific to each service, a first remark concerns different variables contributing to customer satisfaction and loyalty intentions. A second remark concerns the scale of the digital services for health and well-being delivered: as the severity of the issues increases, from physical well-being to mental health, customer satisfaction is less driven by the e-services elements. Moreover, customers tend to focus on very specific aspects concerning the provider that is delivering the service at hand.

Table 2 – Effects of e-service offering elements and provider elements on customer satisfaction and customer loyalty across service types

Variables	Physical well-being	Psycho-physical well-being	Mental well-being	Medical services	Mental and psychological health
Customer Satisfaction					
SERVICE ELEMENTS					
Clarity	SIG. (.238)				
Usability					
Assistance / inform. Functions					
Perceived usefulness	SIG. (.189)	SIG. (.204)	SIG. (.525)		
Involvement of other participants					
PROVIDER ELEMENTS					
Thorough evaluation of problems					
Appropriate and effective treatment	SIG. (.160)		SIG. (.286)		SIG. (.354)
Clear and complete communication			SIG. (.249)	SIG. (.202)	
Understanding of patient's individual experiences					SIG. (.208)
Maintains confidentiality					
Honesty and respect for the patient					
Builds partnership and shares power		SIG. (.262)			
Loyalty Intentions					
SERVICE ELEMENTS					
Clarity	SIG. (.131)	SIG. (.305)	SIG. (.242)		
Usability					SIG. (.204)
Assistance / inform. Functions			SIG. (.237)		
Perceived usefulness			SIG (.368)	SIG. (.367)	SIG. (.328)
Involvement of other participants	SIG. (.155)				
PROVIDER ELEMENTS					
Thorough evaluation of problems	SIG. (.116)				SIG. (.245)
Appropriate and effective treatment	SIG. (.161)	SIG. (.243)	SIG. (.216)		
Clear and complete communication					
Understanding of patient's individual experiences		SIG. (.162)		SIG. (.209)	
Maintains confidentiality	SIG. (.092)				
Honesty and respect for the patient	SIG. (.154)				SIG. (.168)
Builds partnership and shares power	SIG. (.145)		SIG. (.293)		SIG. (.219)

Moving to RQ2, the second goal for the study was to analyze the effects of touchpoints involved in the customer journey of digital services for health and well-being on customers' evaluation of e-service and provider. Again, the analysis has been performed on both the entire sample and by narrowing down the database to each investigated service type, in order to appreciate differences.

According to the main sample, neither first contact touchpoints nor information collection touchpoints were significant, meaning that – overall – they are not able to influence customers' evaluation of digital services for health and well-being and of their provider. Conversely, touchpoints used to provide the services had a significant impact: specifically, mobile apps, video calls and social media all had positive impact on how the provider was overall evaluated, and video calls and social media also enhanced evaluation of the e-service aspects. This suggests that touchpoints

allowing for swift contacts, direct interpersonal communication and availability significantly improve customers' perception of the service received.

By comparing the effect of touchpoints across service types, we found that:

- the effects of certain service provision touchpoints are confirmed for physical and psycho-physical service but not for mental well-being, medical services and mental and psychological health services. This finding appears consistent with those from RQ1, where the contextual elements revolving around service provision were less important or not significant at all for services addressing more "severe" issues. Also, no touchpoint has had a significant effect on customers' evaluation of these services, for neither of both aspects investigated, which reinforces such interpretation.

- as what concerns first contact touchpoint, negative effects of certain touchpoints on the evaluation of providers are found for psycho-physical services and mental health services. This finding implies that customers who, respectively, received advice from friends and family or came across the provider on social media, and/or encountered the provider's offline ads, also later evaluated him/her more negatively.

- as what concerns information collection touchpoints, a positive effect was found for active search on online blogs, journals and forums (for physical well-being services) on how the service aspects were evaluated. Also, a negative effect was found for watching video-reviews on the provider's evaluation, for mental well-being services.

Overall, findings have brought out that the touchpoints used to deliver information or to provide digital services for health and well-being may affect customers' evaluations of the aspects regarding the service itself or the provider who delivers it. Details per each service are provided in Table 3.

Table 3 – Effects of touchpoints on e-service offering elements and provider elements, across samples

	<i>First contact touchpoint</i>	<i>Information collection touchpoint</i>	<i>Service provision touchpoint</i>
Main sample	No effects	No effects.	Effects of: - mobile app on provider (.079) - video calls on service (.079) and provider (.101) - social media on service (.067) and provider (.093)
Physical well-being	No effects.	Effects of - online blogs, journals, forums on service (.097)	Effects of: - mobile app on provider (-.181) - video calls on service (.135) and provider (.149) - social media on service (.105) and provider (.122)
Psycho-physical well-being	Effects of: - friends and family on provider (-.268) - social on provider (-.229)	No effects	Effect of - video calls on provider (.229)
Mental well-being	Effect of: - offline ads on provider (-.313)	Effect of: - video reviews on provider (-.297)	No effects.
Medical services	No effects.	No effects.	No effects.
Mental and psychological health	No effects.	No effects.	No effects.

Research limitations. The main limitation concerns the cross-sectional design of the study, that does not provide enough confidence to claim a causal relationship between customers' evaluation of service-related elements, provider-related elements, customer satisfaction and customer loyalty. Future studies could employ longitudinal designs to improve such aspect, considering that these services usually require multiple sessions. This would be consistent with the control variable on ongoing services being significant for customer loyalty.

Concerning touchpoints, other two limitations can be found. First, touchpoints used for first contact and for information gathering were modeled as dummy variables indicating whether they were or were not the main source for customers. Extensions of the study focusing on this aspect might also ask customers for an evaluation of their experience with these touchpoints nor customers' personal preference for interacting with them. By asking to indicate the main touchpoint used, we assumed customers would use the touchpoint they were more at ease with. Future studies might also address this. Second, the study of touchpoints used for service provision might be further enriched by integrating the response speed and interaction frequency variables, since our findings pointed towards a greater appreciation of those touchpoints enabling live interactions.

Managerial implications. The study entails managerial implications by showing how different types of services vary in terms of aspects involving the offering and the provider significant for developing customer satisfaction and customer loyalty intentions. Even though findings have been provided for health and well-being digital services in general, it is clear from the division between services, that crucial aspects must be addressed accordingly. We therefore believe that, on the one hand, results will be useful to consider while designing and redesigning of these services, as well as to guide service recovery actions. Customers leaving and switching while the treatment is being provided, or not returning for future treatments, might in fact be gained back by designing actions oriented at building back trust based on critical aspects driving satisfaction. A final implication is tied to the role of touchpoints: insights on positive or negative effects of encountering certain touchpoints might be useful for providers to reconsider at least their own use of said touchpoints

and/or try to counteract the effects of third-party owned ones (such as providing reactions of responses to prior customers' reviews). As far as service provision touchpoints are concerned, findings point towards those touchpoints allowing a more meaningful dyadic interaction between customers and providers as those more positively effective on customers' evaluations and, indirectly, satisfaction. This is consistent with previous literature addressing responsiveness and patient satisfaction in health communities (Yang et al., 2015).

Originality of the paper. Many papers in extant literature have addressed the topic of health and well-being services by adopting a service quality perspective, rather than a customer satisfaction one. Although the two concepts may overlap (Dabholkar, 1995), there is a precise distinction that relies on the first being cognitive in nature and the latter being mostly an emotional response (Danaher and Mattsson, 1994). Also, most studies investigating digital health and well-being services have been doing so by focusing on a specific type of service provided (i.e. hospital-provided online care, individual or group online therapy sessions, etc). Of these, most focused on mobile health apps or professional websites.

The study, therefore, aimed to bring comparison between services of different nature that all contribute, in various ways, to customers' health and well-being. Moreover, the study is novel in terms of trying to identify the role of touchpoints constituting the customers' journey before and during the service delivery. Among these, the study included touchpoints new to these contexts, such as social media or communication / videocall platforms, whose use has significantly spread after the pandemic.

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Digital Transformation in the Italian Restaurant Industry: Navigating the Challenges and Opportunities of Food Delivery Services

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Abstract

The advent of food delivery services has significantly transformed the restaurant industry, presenting both challenges and opportunities for restaurant management. This paper analyzes the change in processes, including at the managerial level, that has occurred in restaurant management with the advent of food delivery (Chen et al, 2019), particularly focusing on those types of restaurants that use food delivery the most, such as chains or individual restaurants, operating in the Quick Service Restaurants sector. The Italian food delivery market is growing at a rapid pace and recently witnessed strategic acquisitions, in line with the global trend of digitalization of food industry. (Rizzica and Giorgiantonio, 2018) Restaurants face a drop in the number of dine-in clients, limitation in the dining area, and need to be more efficient in the market. Consequently, they are depending on third-party food delivery services to overcome these issues. One of the advantages as stated by Athira and Devakumar (2021), is that these platforms provide the option of limitlessly expanding dining areas, hence, allowing restaurants to generate larger profits. The article stresses the need for Italian restaurants to adapt to the digital transformation that is taking place in the industry. It implies that they should strive towards improving kitchen operations to handle both dine in and delivery orders efficiently. It also suggests adoption of digital marketing strategies for wider audience access. Further, the paper recommends reviewing the financial models that fail to account for the commissions charged by delivery platforms. The results reveal the difficulties that food delivery service systems pose in restaurant management but offer creative solutions to conventional issues and bring Italy's restaurant industry into the digital age.

Key words: food delivery; digital; management; qsr; food;

Framing of the research. *The basic assumptions in the restaurant industry have in recent years been altered, driven by the influence of food delivery services. This revolution has ushered in the new stage of restaurant management, which is a double-edged sword of evidence and rewards. The emergence of food delivery services in the traditional restaurant model has required the review of the core business, operational, and strategic frameworks especially in the fast food sector. This paper explores this evolution in detail with an emphasis on the Italian food delivery market, which is a microcosm of the global trend towards digitalization in food service.*

Food Delivery Services have played a key role in the sudden growth of movements within the Italian market in conjunction with the global trend toward digitization (Oncini et al, 2020). This change is not only a reflection of consumers' need for ease but also a proactive adjustment of the restaurants to the trend in the consumption of foods. The decrease in dine-in customer numbers (Ma et al, 2021), mostly because of low seating capacities and the need for higher market presence, has led to the use of third-party food delivery platforms by restaurants. These platforms stand to present some opportunities whereby a new income stream is created as well as the ability to reach a wider customer base without restrictions on physical location and seating capacity (Brar et al, 2021).

This paper, inspired by the findings of Chen et al. (2019) and the research of Rizzica and Giorgiantonio (2018), intends to identify the changes in the management processes of restaurants, happened due to the arrival of food delivery services. It is devoted to the QSR sector, and special circumstances and opportunities for both chains and independent restaurants in Italy. Through analyzing strategic responses of these restaurants like kitchen operation optimizations for dual service lines, digital marketing strategies adoption and financial models' adjustment to delivery platform commissions, this study helps to understand the need for Italian restaurants to adjust to a digital shift.

The results of this study are aimed at adding to the wider discussion of digital alteration of the restaurant business (Kobez et al, 2018), in which the innovative solutions that food delivery services provide to traditional problems are emphasized. The purpose of this is to give a broad perspective on the way these services are shaping the face of Italian restaurants in a digital time, following out from other, more international markets that are undergoing the same changes.

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Purpose of the paper. *The main aim of this study is to focus on the revolutionary impact that food delivery services (Recuero-Virto, Valilla-Arospide, 2022) have had on restaurant operations. Under this new paradigm shift, which is quite a deviation from the old models that revolved around dine-in and takeaway services in the absence of courier services primarily, the assumptions are that suppliers are competing on a single price and customers are the ones deciding to buy (Sweeney et al, 2015). In making the business model central in the restaurant industry, particularly in the aftermath of the digital revolution, which has introduced food delivery as a major part of the business model, the aim of this study is to take apart the operational, strategic, and managerial transformations that have taken place in the restaurant industry. Of interest is the shift in restaurant operation models from those that did not allow for the entry of couriers and did not provide any special preparations for delivery, to one where the lines are designed explicitly for delivery purposes.*

The knowledge of this progression is particularly important for a few reasons. First, it is a form of a global change in consumer behavior and preferences, which is found in a growing demand for convenience, speed, and diversity. In the second place, it presents the adaptive methods adopted by restaurants to deal with the challenges and opportunities of this innovation. Other strategies include reorganizing kitchen operations, changing menu items, and the utilization of digital technology to control orders and delivery logistics. It also addresses the economic and commercial implications of such changes, from the revenue streams and profit margins up to the market positioning and consumer contact. To sum up, it underlines the consequences of these changes.

The important of this study lies in the ability to provide a comprehensive analysis of the operational changes that have been observed in the restaurant industry. It also offers a glimpse of the strategic adjustments needed for survival in the digital era. This research aims to reveal the creative possibilities that the restaurants are taking up.

This is achieved through an analysis of the shift in traditional takeaway models to delivery-focused activities. In addition, it supports the educational and practical knowledge about how digitization is changing industry standards and demands. It also works as a compass for restaurant owners, managers and policy makers in how to maneuver through the labyrinth that is the food delivery sector.

Methodology. *Using the given abstract and pertinent literature, a comprehensive mixed-methods research methodology can be developed for the analysis of restaurants with versus without food delivery services. This research is focused on the major changes in the restaurant business that were brought by food delivery services. This mixed-methodology will make use of both quantitative and qualitative methodologies to evaluate process changes, including at the managerial levels. Using this methodology, we are able to overcome the limitations of quantitative and qualitative methods through the employment of mixed methodologies, which in turn makes it easier for them to acquire comprehensive information that would otherwise be unreachable through the use of either method in isolation (Almeida, 2018). Although using different approaches makes research more time-consuming because there are two distinct types of data that need to be collected and analyzed independently (Creswell, Clark, 2017), we believe it is the best solution to provide accurate analysis of ongoing research.*

In the Italian industry, this methodology will concentrate on Quick Service Restaurants (QSRs). A plan that is well-organized and built upon the objectives outlined in the abstract, supported by data from related studies, can be outlined as follows:

The design of this study is to scrutinize and contrast the changes in operation and management in quick serve restaurants (QSRs) in Italy that offer and do not offer food delivery services. The emphasis will be put on kitchen processes and control models.

The sample selection will be performed using a basic quantitative sampling, where Italy has a substantial number of quick-service restaurants (QSRs), with half of them utilizing food delivery services and the other half not.

The objective of the qualitative sample is to select a subset from the quantitative sample in order to conduct in-depth interviews and case studies. This selection ensures diversity in terms of geography, size, and client base.

Data collection methods for quantitative data utilize structured surveys to gather data on the operational efficiency, revenue sources, consumer reach, and financial success of both categories of restaurants (Phellas et al, 2011).

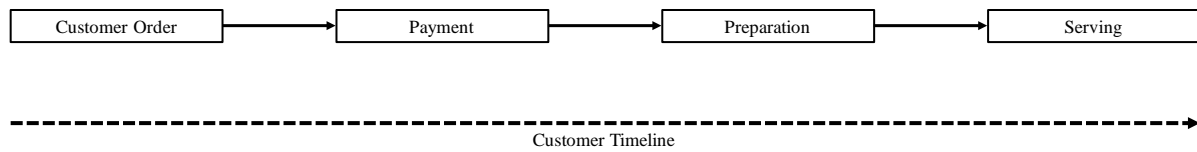
Qualitative data refers to information that is descriptive in nature and cannot be measured or quantified. It includes data obtained through methods such as interviews, observations, and open-ended survey questions. To gain a better understanding of the advantages and challenges associated with incorporating food delivery services, it is advisable to carry out semi-structured interviews with restaurant owners and managers, as well as organise focus groups with staff and customers. Furthermore, it is necessary to scrutinize the financial documents and digital marketing strategies to assess their impact on market visibility and profitability.

Apply thematic analysis (Braun et al, 2012) to identify common themes and differences in managerial practices, challenges encountered, and strategies employed by restaurants that offer delivery services compared to those that do not.

Building a flowchart comparison using both quantitative and qualitative sampling and analysis results in the development of two unique flowcharts:

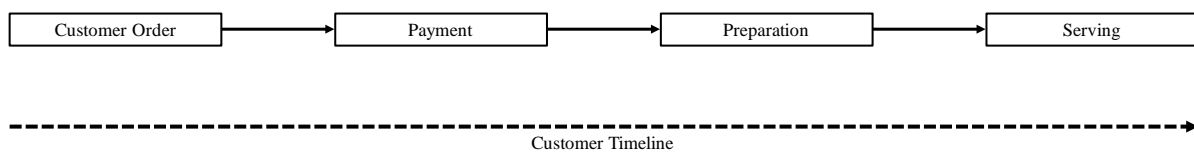
Flowchart 1: Standard production process (customer order - payment - preparation - serving) for restaurants without delivery services.

Figure 1, flowchart for standard production process.



Flowchart 2: Production process incorporating food delivery (online customer order - preparation - packing for transport - rider call - payment - delivery) for restaurants with delivery services.

Figure 2, flowchart for food delivery production process.



These two flowcharts will be used to identify and note variations in restaurant setup, as well as to observe enhancements and changes in restaurant management because of the introduction of food delivery.

Results. It is reasonable to anticipate that the management of restaurants will undergo a significant transformation after the introduction of meal delivery services. The purpose of this study is to examine and compare the operational procedures of two various types of restaurants, where the first one offers a meal delivery service and another that does not offer such a service. We will use the restaurant that does not provide delivery service as a control group. This will allow us to identify differences in terms of operations, people management, supply chain management, and other managerial practices that may be different from one another.

We have developed two distinct flowcharts to simplify this study. The first flowchart is for restaurants that offer delivery service, and the second flowchart is for businesses that do not offer delivery service. Through the process of superimposing these charts onto the operational procedures of each restaurant, we will be able to identify variances readily and explicitly in the operations as well as potential areas of concern. Following that, these variations will be accurately documented in a comparative matrix using a methodical approach. With the use of this technology, we can directly compare the production processes of the two different types of catering and highlight elements that are particularly important.

We are anticipating the discovery of major differences, particularly in relation to the management of time. Restaurants that offer delivery services are required to coordinate their delivery schedules with those of the couriers, whereas restaurants that do not offer delivery services do not have to worry about this issue. In addition, we anticipate discovering essential issues affecting the preparation of products for delivery. These aspects include the utilization of innovative materials and specialized equipment for packaging, as well as thermal bags that are utilized for transportation. Restaurants that provide delivery services face an additional challenge because of these features, which have an effect not only on the operation of the business but also on the management of expenses.

Research limitations. The in-depth analysis of the significant impacts that meal delivery services have on restaurant operations, no matter how comprehensive it is, is exposed to many potential limitations that may affect the scope, depth, and generalizability of the findings. To the conduct of the accurate assessment of the findings of the research and providing the direction for further research in this area, the thorough understanding of these limitations is very important. It is likely that there will be constraints due to geographic and cultural differences. It is likely that the research fails to capture the variety of restaurant operations and consumer behaviors that are prevalent worldwide, especially when it looks at the Italian food delivery business or niche areas such as Quick Service Restaurants (QSR). Different regions may use different patterns, regulatory frameworks, and customer preferences that can influence the acceptability of food delivery services and their implications.

In a dynamic and evolving market, constraints are likely to be experienced. Information technology is growing in this sector very speedily and customer demand is always new in the food delivery industry. This research may overlook the latest developments or pending trends that have the capacity of impacting restaurant business. Such examples include novel delivery methods, alterations of consumer tastes, and legal changes that have an impact on the food delivery system.

We can trust in the secondary data, because in case a research project is largely dependent on previously published literature and secondary data sources, the chances of the research running into limitations such as inaccuracy, irrelevance, and timeliness of the data are quite high. Due to the dynamic nature of the food delivery market, the information may be outdated, which could have been overlooked in previous research. Lucas et al., (2013) also point out that, given the diversity of business models, management styles and operational techniques that are employed in restaurants, one should focus on the diversity of management and operational practices in this field. This diversity might not be considered in the research, which could result in simplifying the complexities and nuances of how diverse types of

restaurants adapt and use the meal delivery services. Finally, there is the risk of having a major influence on the realization of financial objectives. The variable pricing structures, revenue models and commissions of the delivery platforms can make it difficult to understand the financial impact of implementing food delivery services. This happens because different delivery platforms have different commission rates. The study may not provide a good deal of the long-term financial viability and profitability of restaurants that adjoin a meal-delivery service.

Managerial implications. Other than giving informative that is very valuable to restaurant operators, managers and other stakeholders in the restaurant industry, the study, of the wide impact of meal delivery services on restaurant operations, has critical managerial implications. The impacts of integrating meal delivery services into traditional restaurant formats should be weighed to deal with the challenges and opportunities that the fusion of services brings about. Below we indicate the most important managerial implications derived from the research, along with available supplementary papers.

Strategically adapting, the restaurants' management must realize the requirement of integrating digital meal delivery services into their general business strategy. This does not only involve working with the third-party delivery services, but also improving their web presence and the digital ordering systems to make the customer experience more satisfying. Managers need thorough knowledge of the inherent intricacies of such platforms for them to use digital platforms in growing their customer base beyond the limitation of the physical location and seating capacity.

In the research conducted by A. R. and Devakumar P.S. (2021), the article referred to as *Online Food Delivery- A Solution for Upsurging Restaurant Business* examines the potential of restaurants making money by supplying the meals to the homes of the customers, thus avoiding the limitations that are usually associated with businesses.

Through the implementation of dual service lines and the enhancement of operational efficiency: The entry of meal delivery services calls for a rethinking of kitchen operations to effectively handle orders from both in-house dining and delivery. Managers were required to think about the layout of the kitchen reorganization, the use of modern technologies in order administration as well as the creation of separate service lines for delivery orders to ensure operation efficiency and excellent service across both channels.

The research conducted by P. Feldman, Andrew E. Frazelle, and R. Swinney (2021) titled "Managing Relationships Between Restaurants and Food Delivery Platforms: The paper "Conflict, Contracts, and Coordination" explores a number of approaches that can be applied to the development of service lines – in the context of food delivery systems – as well as financial models.

Re-evaluating the financial model, restaurant management needs to reconsider the financial model they have because delivery platform fees affect profitability. Thus, the assessment of profitability in cooperation with delivery providers, changing pricing strategy to accept commissions payments, as well as the development of tools to raise order value and customer loyalty through promotions and loyalty programs are the steps to be undergone.

The digital shift, which is happening in the restaurant business, emphasizes the need for restaurants to implement digital marketing approaches to enhance their presence in the market. A well-established online brand presence should be one of the key goals for managers, they can achieve this goal by using social media, search engine optimization (SEO), and targeted online advertising. In a competitive context, this technique can be instrumental in attracting new clients, retaining the clients you already have, and improving overall market penetration.

Success needs adaptation to the consumer's preferences and trends. Understanding the dynamics of the changing consumer's preference is critical, and so is the need for adjust to those preferences. This includes the creation of menu items that are conducive to delivery, the study of packaging innovations that sustain food freshness during transport, and the awareness of consumer interests in alternatives that are healthier, more sustainable, and locally sourced.

Focusing on the online meal delivery market, the article called "A Study of Customer Satisfaction with Online Food Delivery Applications" by Rapariya (2023) emphasizes the importance of reaching customer expectations.

Management implications brought about by the increasing meal delivery industry have highlighted the need of the strategic, operational, and financial changes to be implemented. Restaurant managers who are open to adopting these changes can deal with the challenges that the digital era brings in a more effective manner and can be competitive and profitable.

To be successful in a continuously changing digital food service environment restaurant managers need to carry out further research into these impacts. This will lead to deeper comprehension and sharper techniques.

Originality of the paper. The research is notable for its originality in several respects, particularly for its detailed assessment of the impact of food delivery services on the restaurant industry, with a focus on the Italian market and the Quick Service Restaurants (QSR) sector. The width of approach this research adopts for considering shifts in restaurant management practices, operational adjustments, and strategic changes, which are driven by the introduction of meal delivery services, is a major dimension of the novelty of this research. To demonstrate why this research is unique, the following reasons are provided, along with supporting articles which are relevant.

A unified view of digital revolution in food service in comparison with other studies that could have focused on individual parts of food delivery services, this research provides an integrated look at digital changes occurring in food service industry. It not only looks at the operational and managerial changes but also explores the strategic implications that restaurants will come across as they adapt to this new business model. A deeper understanding of the opportunities and challenges posed by the food delivery services can be achieved by using this broad-based approach.

Emphasis on Italian market and quick-service restaurant sector, the research brings a new layer of originality by studying the Italian food delivery market and its effect on fast-service restaurant sector. This allows to understand a

certain geographical context and industry segment. By having this focus, it is easier to conduct deeper research of the influences cultural, economic, and regulatory factors have on the adoption and integration of food delivery services in Italy. This study may give some ideas that are relevant to the other markets.

Paper in support of the argument: *The Work in the Gig Economy*. The research called “Evidenze dal mercato del food delivery in Italia” was published in 2018 by L. Rizzica and Cristina Giorgiantonio. This research offers an introduction to the Italian food delivery market and its effect on the economy and legislation setting.

A Comprehensive Analysis of the Changes in Operations and Dual Service Lines: This study is pioneering as it gives a detailed overview of the methods that restaurants are using to restructure their kitchen operations and service lines to cater for orders from both dine-in restaurants and delivery services. The study contributes new knowledge about the logistical shift that is required for victory in digital food delivery system. These new perspectives are emphasized by emphasizing the operational advantages and challenges, which are associated with dual service lines management.

The findings of the research in respect of how restaurants can “fix” economic problems of work with delivery platforms are a result of the research itself having examined digital marketing techniques and the reevaluation of financial models in response to food deliveries. This involves the application of new tactics in pricing, promotions and customer participation in the age of digital revolution.

This study is aimed at the way restaurants change their menu provisions and business model to cater for the demands of the food delivery market that are influenced by the changes in consumer preferences, and trends. The novelty of this research is in the fact that it studies how restaurants are changing their menu offerings and ways of doing business. Within the framework of meal delivery services, this aspect of the study highlights the dynamic interrelation between the behaviour of customers and the methods applied by restaurants.

Being concise, the peculiarity of this study consists in the complete analysis, the focus on certain regions and industries and consideration of ways, in which the introduction of food delivery services has impacted functions and strategies of restaurants. This research also helps in bridging a gap in the available literature and becomes a valuable material for the restaurant managers, owners, and lawmakers, in addition to providing some fresh insights and contributing to the academic and practical knowledge of the digital transformation in the food service industry.

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Exploring Metaverse Adoption in High-Involvement Purchases: Insights from a field research

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Abstract

The emergence of the Metaverse poses a new challenge within the digitalization process of brands and retailers. The proliferation of new technologies such as Extended Reality (XR), 5G networking, and Artificial Intelligence (AI) is laying the groundwork for creating this three-dimensional virtual world where users, through their avatars, can carry out their daily activities, including shopping. By making digital twins, companies can extend the purchasing process within these touchpoints, thus offering immersive digital interaction with their products. This study provides insights into the factors influencing consumers' intention to use Metaverse Technologies (MT) to support the purchasing process of high-involvement goods. Through a quantitative research approach using a structured questionnaire, a theoretical framework based on UTAUT was tested using responses from 103 lead buyers of a helicopter industry company, and PLS-SEM was employed. The findings reveal that performance expectancy and effort expectancy significantly impact usage intention. Likewise, a significant effect of perceived interaction quality on both performance expectancy and effort expectancy was found. Additionally, perceived curiosity was found to have an impact on effort expectancy. Theoretical contributions are provided, supporting the ongoing research stream on consumers' engagement intention in the Metaverse. Moreover, relevant managerial implications are presented, serving as guidelines for firms needing a clearer understanding of the marketing activities required to access this new virtual world.

Key words: *metaverse; high-involvement goods; usage intention; metaverse technologies; PLS-SEM; purchasing behavior*

Framing of the research. *There is significant buzz and interest surrounding the Metaverse (Dolata & Schwabe, 2023). The Metaverse is a 3D digital virtual world that extends beyond reality and is emerging as a transformative innovation. It allows users to interact via avatars, engaging their senses and facilitating various activities such as meeting with friends, working, shopping, building social and emotional relationships, attending concerts, meetings and events (Kozinets, 2023; Mourtzis et al., 2022). The term Metaverse was first introduced into science fiction literature in the 1990s by Stephenson (1992) and has since become part of scientific discourse (Park & Kim, 2022). Considered a new evolution of the Internet (Mourtzis et al., 2022), it refers to a virtual shared space created by the convergence of physical and virtual reality.*

Defining the Metaverse accurately is challenging due to its potential impact on various sectors, such as entertainment, education, shopping, and social networking. However, the commonly discussed Metaverse is a virtual world that resembles the real world and provides a space for users to interact with each other. According to Yoo et al. (2023) it is an online collaborative shared space consisting of 3D environments that use high consumer immersion techniques to reduce the perception of technological mediation; allows for the use of transferrable and unique digital assets; and enables user-generated digital personas to interact with each other. Essentially, the Metaverse is a combination of Virtual Reality (VR), Augmented Reality (AR), Extended Reality (XR), Blockchain, Artificial Intelligence (AI), 5G networking, Internet of Things (IoT), social media, and online gaming. It creates a seamless and immersive digital environment where users can interact, create, and transact.

Due to its characteristics, the Metaverse is expected to revolutionize daily activities and interpersonal engagements involving individuals, businesses, products, and services. Despite widespread interest and readiness to work on its construction, there is still much uncertainty surrounding its nature and potential adoption. The ultimate success and adoption of the Metaverse remain uncertain because of complexities and uncertainties surrounding issues such as privacy, data ownership, digital rights, and inclusivity (Dwivedi et al., 2022). Nevertheless, an increasing number of companies are investing in the Metaverse, and the global market size is expected to reach USD 840 billion by 2030, with around 1.5 billion users (Statista, 2023). Several reports indicate a growing interest in the innovative functionalities of

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virtual environments and digital platforms with 79% of consumers prefer to purchase physical and virtual goods in a virtual space (McKinsey & Company, 2022). Moreover, according to recent research by Osservatorio Extended Reality & Metaverse (2023), the Retail and Entertainment sectors dominate investments, accounting for 30% each.

Although the future of this virtual space remains unclear, it is evident that various interaction modalities and novel augmented touchpoints are emerging for brands, consumers, and retailers. All this has the potential to create significant value and strategically influence the customer experience throughout the pre-purchase, purchase, and post-purchase phases (Yoo et al., 2023). In light of this scenario, the aim of this study is to investigate the impact of Metaverse on retail experiences, specifically consumers' intention to use Metaverse Technologies (MT) when purchasing high-involvement goods for which the consumers' decision-making process is a complex problem-solving (Nayeem & Casidy, 2013).

Purpose of the paper

Theoretical background

Kozinets (2023) argues that the Metaverse plays a decisive role in transforming customer experiences and creating new opportunities in service relationships. Users engage in a variety of activities, including shopping, which can be experienced immersively through devices such as Head-Mounted Displays (HMDs). They can also purchase non-fungible tokens (NFTs) in the form of avatars, digital real estate, and digital artwork, and try out products by viewing and/or testing them within a Metaverse platform before making a purchase (Kozinets, 2023).

The early stage of development and dissemination of Metaverse emphasises the need to focus on factors that could influence their usage, providing insights into potential consumer behaviours. Several studies have examined the elements that affect individuals' willingness to engage with the Metaverse, with many concentrating on the educational context (Alfaisal et al., 2024). However, there appears to be a significant gap in the literature regarding consumers' intentions to use MT while shopping, particularly for high-involvement products. Consumers' decision-making process for such products is a complex problem-solving sequence that involves problem recognition, information search, brand evaluation and selection, purchase, and post-purchase evaluation (Nayeem & Casidy, 2013). Therefore, high-involvement buying decisions entail a significant level of financial risk and emotional investment for customers. The purchase of infrequent, expensive, and high-involvement products typically involves a learning process, necessitating detailed information, extensive research, comparison, and deliberation (Grewal et al., 2003; Kotler et al., 2007; Nayeem & Casidy, 2013). High-involvement purchases, such as buying a house, an automobile, or expensive luxury items like jewelry or designer clothing, often require a unique and emotional experience for customers (Grewal et al., 2003; Nayeem & Casidy, 2013).

Previous studies have identified several types of information sources that consumers consider trustworthy and reliable when making high-involvement purchases (Doran, 2002). The process of selecting information sources may include external sources, such as information from agents, family and friends, product trials, and research before making a final decision. The Internet also has a significant impact on several stages of the consumer decision-making process (Nayeem & Casidy, 2013). It is an efficient medium for accessing, organizing, and communicating information. Several studies discuss the role of digital technologies in stimulating high-involvement purchases (i.e., Sihi, 2018; Shen et al., 2021). For instance, Sihi (2018) explored the impacts of virtual reality (VR) and augmented reality (AR) technologies on the high-involvement purchase decisions of home-buying, emphasizing their role in enhancing consumer information search and evaluation of purchase alternatives. This study suggests that VR and AR technologies significantly impact consumer information search, evaluation of purchase alternatives, and the role of sales agents in high-involvement purchase contexts.

The potential of the Metaverse and its associated technologies to assist consumers in making informed purchasing decisions has been highlighted by Shen et al. (2021) and Dwivedi et al. (2022). This objective can be achieved by creating a virtual platform where customers can interact with the product, explore its features, and even simulate its use. Furthermore, enabling direct remote interaction with the seller during the trial phase is achievable. This, in turn, allows for assistance to be provided not only during the pre-purchase stage but also post-purchase. It also enables the involvement of other people in the shopping experience who can interact with the shopper throughout the purchase process. The Metaverse can incorporate digital twins and other interfaces embedded in the platform for a seamless operation and superior customer experience (Dwivedi et al., 2022). The concept of a digital twin has found wide applications in industries such as automotive, e-commerce, healthcare, manufacturing, and logistics. It is a virtual replica of actual operations that can help organizations minimize costs, prevent accidents, optimize planning, and allocate resources efficiently (Dwivedi et al., 2023; Papagiannidis et al., 2014). The digital twin enables the presentation of products in virtual spaces in an authentic and realistic manner, conveying product features through text, photographs, and videos. This facilitates the description of products and their usage (Papagiannidis et al., 2014; Dwivedi et al., 2022). For example, in the virtual world of the Metaverse, marketers can employ targeted strategies to appeal to customers during high-involvement purchases. This involves highlighting product features, benefits, and quality to alleviate concerns and build confidence in the decision-making process, both online and in physical stores. Creating virtual representations of products is a challenging task. However, a simulated experience in the Metaverse can enhance the shopping experience by increasing engagement, enjoyment, satisfaction, and purchase intention (Papagiannidis et al., 2014; Dwivedi et al., 2022).

Framework for High-Involvement Purchasing in the Metaverse

The aim of this study is to identify the factors that drive consumers' intention to use MT when purchasing high-involvement goods. The proposed framework for High-Involvement Purchasing in the Metaverse is based on the original UTAUT model (Venkatesh et al., 2003), incorporating the most relevant variables as depicted in Figure 1. The UTAUT model and its extended versions (Venkatesh et al., 2012) have been widely adopted in numerous studies for exploring consumer behaviors towards emerging technologies, including the Metaverse (i.e., Alkhwaldi, 2023). The proposed model considers three theoretical constructs from the UTAUT framework: Performance Expectancy, Effort Expectancy, and Social Influence. Additionally, variables such as consumer innovativeness, perceived interaction quality, and perceived curiosity are included.

Performance Expectancy is "the degree to which an individual believes that using the system will help him or her to attain gains in job performance" (Venkatesh et al., 2003, p.447). In the context of this study, this variable aims to determine the extent to which consumers believe that using MT can provide valuable support in their process of purchasing high-involvement products.

Effort Expectancy is a variable that measures "the degree of ease associated with the use of the system" (Venkatesh et al., 2003, p.449). It is crucial to evaluate MT's perceived ease of use, considering the potential barrier this dimension may pose. For instance, to interact in a highly immersive manner with a virtual world, consumers are required to wear devices such as HMDs.

Social Influence is "the degree to which an individual perceives that important others believe he or she should use the new system" (Venkatesh et al., 2003, p.451). In cases where adopting a particular technology is mandatory, such as for an upgrade of workplace technologies or when required by law, the effect of social norms is attributable to an individual's response in terms of conformity, thus resulting from a form of social pressure. When adoption choice is voluntary, social norms can influence how a technology is perceived. This can activate mechanisms such as internalization and identification (Venkatesh et al., 2003). This is relevant when adopting MT to support the process of purchasing high-involvement products.

The literature suggests that Performance Expectancy, Effort Expectancy, and Social Influence positively impact the intention to use a new technology (Venkatesh et al., 2012). Based on this, the following hypotheses are formulated:

H1: Effort expectancy positively affects the intention to use MT for high-involvement product purchases

H2: Performance expectancy positively affects the intention to use MT for high-involvement product purchases

H3: Social influence positively affects the intention to use MT for high-involvement product purchases

Consumer innovativeness drives individuals to try innovative and different products, often placing them as early adopters (Roehrich, 2004). The importance of an individual's openness to innovation in adopting new technologies has been extensively studied in marketing literature (Handarkho & Harjoseputro, 2020; Shanmugavel & Micheal, 2022). MT have the potential to revolutionise the consumer purchasing process, especially for innovative consumers. This creates an opportunity for highly innovative individuals to be more willing to experiment with these technologies. Thus, the following hypothesis is proposed:

H4: Consumer innovativeness positively affects the intention to use MT for high-involvement product purchases

The variable of perceived interaction quality assesses a user's belief in a computer system's ability to facilitate adequate interaction with the digital environment. It is important to interact with high-involvement products in a digital environment to gather necessary information for evaluation. Previous research has emphasized the role of perceived interaction quality in influencing the utilitarian aspect of consumer behavior (Kang et al., 2015; Nandi et al., 2021). Thus, it is considered an appropriate antecedent of the utilitarian variables in our model - performance expectancy and effort expectancy. Based on this, we propose the following hypotheses:

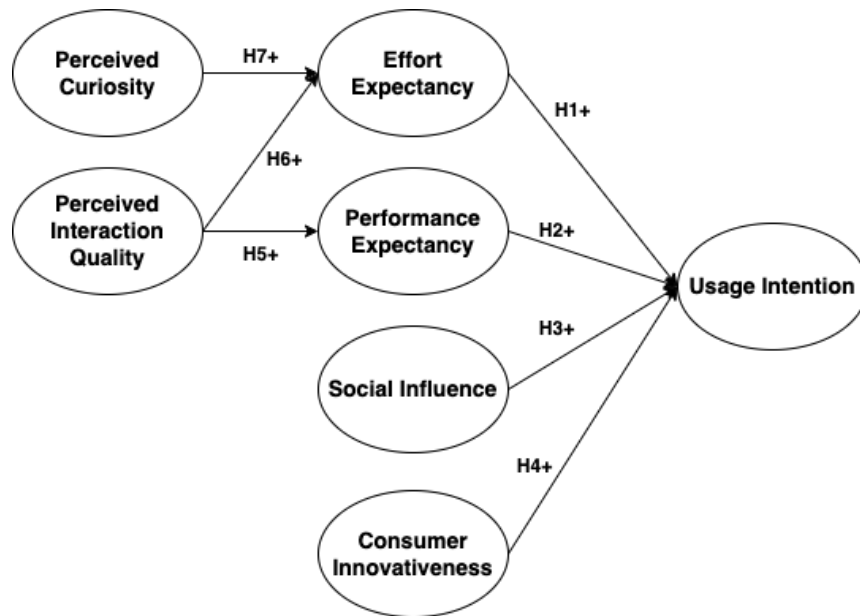
H5: Perceived interaction quality positively affects performance expectancy

H6: Perceived interaction quality positively affects effort expectancy

Perceived curiosity is "a desire to obtain and learn new information and knowledge that stimulates human behaviour to explore novel ideas" (Alkhwaldi, 2023). Several authors have included the variable to study the context of the Metaverse and in many studies is considered as an antecedent of the Effort Expectancy (Aburbeian et al., 2022; Alkhwaldi, 2023). Based on this, we propose the following hypothesis:

H7: Perceived curiosity positively affects effort expectancy

Figure 1 - Framework for High-Involvement Purchasing in the Metaverse



Methodology

Measures

An online survey was conducted to measure the variables of the proposed framework for High-Involvement Purchasing in the Metaverse using established and reliable scales sourced from the literature. The survey was aligned with prior research on the adoption of new technology (Aiolfi, 2023; Shukla & Sharma, 2018; Venkatesh et al., 2012) and to ensure reliability and validity, survey design adhered to specific protocols and guidelines (i.e., Evan & Miller, 1969; Kountur, 2011). Multiple-item scales informed by previous research in consumer behavior, technology adoption, psychology, and marketing theories were used to measure variables in the online survey. Adaptations were made to suit the study's dimensions. The Performance Expectancy scale was evaluated using Escobar-Rodríguez & Carvajal-Trujillo's (2014) 4-item scale. The Effort Expectancy was measured with 4-item scale derived from Venkatesh et al. (2003), and Social Influences were assessed using the 3-item scale by Venkatesh et al. (2012). Consumer Innovativeness was assessed with 4 items-scale by Parasuraman & Colby (2014); Perceived Curiosity and Perceived interaction quality were measured using 3-points scales derived respectively from Agarwal & Karahanna (2000) and Kim & Ko (2019). Finally, Usage Intention was measured using a 4-item scale as utilized by Ramos-de-Luna et al. (2016). Participants used self-anchoring scales from 1 to 7 points to express agreement or disagreement with statements, from 'Strongly Disagree' (1) to 'Strongly Agree' (7).

Sample and data collection

The Microsoft Form platform was used to design and distribute the questionnaire online. Administration was carried out through direct mail, targeting lead buyers of an Italian helicopter industry company who had shown interest in the product during trade fairs or through the company's website contact form. The survey began by presenting the scenario in Figure 2.

Figure 2 - Survey scenario

Imagine being interested in purchasing a *Company's Brand* helicopter. The company offers you a cutting-edge service: access to a virtual environment in the Metaverse, where you will have the opportunity to:

- Explore a faithful digital replica of the original *Company's Brand* helicopter;
- Analyze in detail the internal and external structure of the vehicle;
- Conduct virtual test drives, experiencing control as if you were physically at the helm;
- Receive assistance from an aviation industry expert, represented by an avatar, who will accompany you in all these activities.

All of this without the need to visit the company, allowing you to connect remotely from wherever is most convenient for you. Now, we invite you to read the following statements and express your level of agreement or disagreement

A hyperlink included in the email invited recipients to participate in the study, redirecting them to the form page for completion. Data collection took place between January and February 2024. The questionnaire was available in both

Italian and English to accommodate the participation of the company's clients from countries other than Italy. A total of 580 lead buyers were present in the Company's database and were contacted. Finally, 103 questionnaires were collected, resulting in a response rate of 17.76%. The sample consisted of 90.3% men and 8.7% women, with an average age of 53 years. The sample characteristics are shown in Table 1.

Table 1 - Sample Characteristics

Group	Frequency (N=103)	Percentage (%)
Gender		
Man	93	90.3
Woman	9	8.7
n/c	1	1.0
Age		
< 26	1	1.0
26-35	7	6.8
36-45	15	14.6
46-55	38	36.9
56-65	27	26.2
≥ 65	15	14.6
Education		
High school or below	9	8.7
Bachelor's degree	35	34.0
Master's degree or above	59	57.3

Results. The study employed the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach and the SmartPLS 4.0.9.6 software to analyze the proposed Framework for High-Involvement Purchasing in the Metaverse (Abdi, 2007; Fornell & Bookstein, 1982; Ringle et al., 2024). PLS-SEM was selected because of its ability to evaluate intricate structural equation models and analyze correlations between variables, particularly in situations where the distribution is non-normal and the sample size is not large, or at least 10 times the maximum number of indicators of a latent variable (Hair et al., 2011). To ensure the reliability and convergent validity of each construct, we evaluated the adequacy of individual items and composites. Convergent validity of measures was tested by examining the significance of factor loadings and composite reliability. The measurements presented in Table 1 demonstrate satisfactory results in terms of both convergent and discriminant validity. This is evidenced by the factor loadings, rho_A, and AVE, which were either above or very close to the 0.70 threshold. Additionally, Cronbach's alpha and rho_A exceeded the cut-off points of 0.70, indicating internal consistency reliability (Dijkstra & Henseler, 2015; Hair et al., 2022; Santos, 1999). The AVE values were all above 0.50, indicating acceptable convergent validity (Sarstedt et al., 2022). Additionally, the HTMT ratio values in Table 2 were all below the threshold of 0.85, indicating discriminant reliability (Henseler et al., 2015).

Table 2 - Reliability and validity tests

Construct	Cronbach's α	rho_A	AVE	Mean(SD)
Performance Expectancy (PE)	0.955	0.956	0.880	4.55 (1.48)
Effort Expectancy (EE)	0.945	0.947	0.859	4.40 (1.45)
Social Influences (SI)	0.945	0.947	0.902	3.57 (1.61)
Consumer Innovativeness (CI)	0.921	0.927	0.811	4.56 (1.49)
Perceived Curiosity (PC)	0.967	0.967	0.938	5.24 (1.49)
Perceived Interactivity Quality (PIQ)	0.919	0.921	0.862	5.23 (1.36)
Usage Intention (UI)	0.979	0.979	0.942	4.67 (1.67)

Table 3 - Heterotrait-monotrait (HTMT) ratio

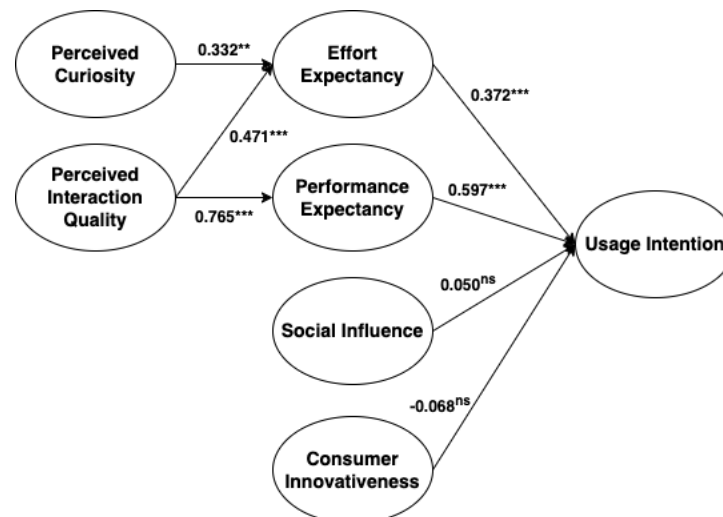
	CI	EE	PC	PE	PIQ	SI	UI
CI							
EE	0.833						
PC	0.635	0.730					
PE	0.643	0.816	0.783				
PIQ	0.579	0.780	0.827	0.817			
SI	0.751	0.841	0.679	0.811	0.749		
UI	0.649	0.853	0.866	0.913	0.847	0.789	

To evaluate the proposed framework, we used PLS-SEM due to its proficiency in analyzing variable correlations and evaluating intricate structural equation models. The bootstrap procedure was conducted using Smart PLS 4.0.9.6 software with 5000 bootstrap samples. We applied a bias-corrected 95% confidence interval and accelerated bootstrap method for model analysis. Table 3 presents the synthesized findings of the main effects. The results support H1 and H2, as effort expectancy ($\beta=0.372$, $P<0.000$) and performance expectancy ($\beta=0.597$, $P<0.000$) exerted positive and significant effects on usage intention. Additionally, perceived curiosity ($\beta=0.332$, $P<0.006$) was found to be positively related to usage intention, supporting H7. The study found that social influences ($\beta=0.050$, $P>0.05$) and consumer innovativeness ($\beta=-0.068$, $P>0.05$) did not have a significant effect on usage intention, therefore H3 and H4 were not supported. Furthermore, perceived interaction quality had a positive and significant effect on performance expectancy ($\beta=0.765$, $P<0.000$) and effort expectancy ($\beta=0.471$, $P<0.000$), thereby supporting H5 and H6.

Table 4 - Results of hypothesis testing

Hypothesis	Coefficients	S.E.	P	Results
H1: EE → UI	0.372***	0.102	0.000	Supported
H2: PE → UI	0.597***	0.079	0.000	Supported
H3: SI → UI	0.050	0.095	0.598	Not Supported
H4: CI → UI	-0.068	0.078	0.384	Not Supported
H5: PIQ → PE	0.765***	0.049	0.000	Supported
H6: PIQ → EE	0.471***	0.131	0.000	Supported
H7: PC → EE	0.332**	0.121	0.006	Supported

Figure 3 - Structural Model: Framework for High-Involvement Purchasing in the Metaverse



Note(s): ***: p -value < 0.001 ; **: p -value < 0.01 ; ns: not significant

Theoretical and Managerial implications. The obtained results can provide valuable insights to support the actions of businesses intending to extend the sale of high-involvement goods to the Metaverse. The significance of effort expectancy and performance expectancy in explaining usage intention confirms previous findings in the literature, emphasizing the importance of the utilitarian dimension for consumers in their technology adoption journey. This is also applicable to sales management conducted through the Metaverse. It is crucial to carefully assess the User Experience within the virtual environment to ensure ease of use and utility in supporting the purchasing process. To effectively reduce the effort involved in purchasing high-involvement goods, delivering an experience that highlights the appropriate level of immersion required when designing the virtual experience is necessary. Therefore, it is important to evaluate whether XR technologies, such as Head-Mounted Displays, can meet this requirement or if a two-dimensional virtual world accessible via a normal screen would be more suitable.

Thereafter, to support the Metaverse in terms of service relationships, companies could leverage the improved quality of interaction it offers. The potential for seamless engagement within the digital realm should extend beyond product interaction alone. It should encompass the accessibility of a sales representative for enhanced interaction, thereby augmenting the utility of the Metaverse in both pre- and post-purchase stages. For instance, the capability of immersive interaction could be showcased by enabling product testing opportunities during trade shows or other physical product exhibitions. By accessing the Metaverse through a Head-Mounted Display (or even a PC or smartphone) and offering guidance on navigating such environments, the true capabilities of these tools would be demonstrated.

Furthermore, consumer innovativeness did not emerge as a significant variable. This suggests that the level of digitalization is already high enough that consumers do not view the Metaverse as a disruptive innovation. Therefore, it

is not necessary to exclusively focus on that particular segment to enhance this experience. However, it is possible to direct the testing of such technologies towards customers who express greater curiosity in them. It is feasible to collect expressions of interest through a company's online channels, such as their website or social media, to offer test versions concurrently with assistance for their utilization, both remotely and in-person.

Research limitations. The research provides significant contributions to the adoption of the Metaverse theme, yet it also presents limitations. Firstly, the still-emerging nature of the Metaverse phenomenon may necessitate further exploration. Through qualitative research, it would be possible to uncover new relevant dimensions and variables in explaining consumers' intentions to use the Metaverse. Furthermore, this research aimed to focus on high-involvement goods by analyzing the market of a helicopter company. Extending the investigation to other sectors (e.g., automobiles, yachts) could enhance the generalizability of the model's variables and allow for comparisons across different sectors, leveraging a more diverse and extensive sample. Finally, since usage intention was analyzed, future studies could include use behavior as well, targeting sectors and consumers already using MT to support the purchasing process to conduct a more comprehensive analysis of the model by incorporating use behavior, as in the original UTAUT framework proposed by Venkatesh et al. (2003).

Originality of the paper. To the best of our knowledge, this research is among the first to explore the key factors that may lead consumers to consider using the Metaverse for shopping. Specifically, this study is the first to examine the intention to use it to support the purchasing process of high-involvement goods. The findings have addressed the gap in the literature by applying the proposed model, based on the UTAUT model with additional consumer-related variables, thus investigating its applicability to the adoption of this technology. The proposed framework for High-Involvement Purchasing in the Metaverse was able to extract valuable insights into consumer behavior towards the new scenario offered by the Metaverse and the enabling technologies thereof.

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Word of mouth vs. word of machine: a preliminary analysis

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Abstract

The present paper describes an ongoing research project aiming at exploring the managerial implications of integrating Artificial Intelligence (AI) in the analysis of hotel reviews, both textual and numerical. The strategic incorporation of AI technology has seen significant growth across various management domains. In the hospitality sector, the availability of big data also facilitates applications of machine learning in the management of online reviews. This work focuses on the role of the so called “word of machine” as an alternative to the “electronic word of mouth” (eWOM) which has dominated hotel reviews in recent years. To this respect, a large body of literature has demonstrated that consumers use feedbacks from previous users in the form of eWOM because they reduce their uncertainty. At the same time, researchers have disagreed on which eWOM metric is the most influential on consumer behavior and firm sales. In parallel to human-based recommendations, the rapid development and adoption of AI has transformed and is transforming today’s marketplace, where new forms of recommendations based on AI are pervasive.

Building on these premises, the paper proposes a comparison of eWOM and AI based recommendations, namely between numerical ratings given by a consumer in online reviews with the numerical ratings that AI would assign to the textual review provided by the same consumer, contributing to the literature that compares human based recommendations with AI based recommendations. The goal is to shed light on the coherence (or not) between textual and numerical reviews and on the potential of AI tools in predicting human suggestions.

Preliminary findings, based on a pilot sample of 40 hotels in Rome and London, suggest that ChatGPT evaluates customer ratings differently when compared to direct ratings given by the customers in their reviews of hotels, as it is able to predict the exact score only in about one case out of three. Results are consistent across Italian and English languages. Results do not necessarily imply inefficacy of AI assessment, since there could be a bias in how customers represent their text reviews with a rating, leading to over- or underestimation compared to their textual assessments. The ongoing research project includes a second step based on experimental analysis, which may better explore whether such result is due to consumer bias. Moreover, experimental scenarios will allow to study the relative importance of different types of human based and AI based recommendations on consumer preference and purchase intention.

Technology facilitates real-time monitoring of reviews, enabling managers to derive actionable recommendations for optimizing brand positioning and competitiveness. This data-driven approach empowers informed decision-making and enables proactive service management. Furthermore, this paper contributes to the expanding literature on AI applications in industry sectors, offering practical recommendations for all the stakeholders involved.

Key words: artificial intelligence; ChatGPT; online reviews; textual; numerical; hospitality sector

Framing of the research. *Since the advent of the Internet, a large body of literature has been developed around the concept of electronic word of mouth (eWOM), as a web-based evolution of the traditional concept of word of mouth based on oral communication that “provides a mechanism to shift power from companies to consumer” (Hennig-Thurau, Gwinner, Walsh, & Gremler, 2004). Previous research has demonstrated that consumers use feedbacks from previous users in the form of eWOM because they reduce their uncertainty. For example, some studies have focused on the way online reviews affect purchase intention (e.g. Mauri & Minazzi, 2013); other authors have emphasized that better review ratings, by enhancing product reputation, lead to higher price levels (e.g. Abrate & Viglia, 2014). Babic Rosario, Sotgiu, De Valck, & Bijmolt (2016) showed the existence of a positive effect of eWOM on sales in different platform and product contexts, by providing a comprehensive meta-analysis covering 96 previous empirical studies. At the same time, they emphasize that eWOM has been proxied by different metrics in empirical analysis, and researchers have disagreed on which metric is the most influential. Moreover, while several analyses used numerical data (such as review ratings, and/or volume), other authors have highlighted the role of text (as well as other forms of user generated contents). Ghose & Ipeirotis (2010) analyzed the importance of text style, in terms of subjectivity, informativeness, readability, and linguistic correctness. Hu, Koh, & Reddy (2014) emphasizes the role of online review sentiment, suggesting that numerical ratings*

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may not always be consistent with text sentiments and a sequential decision-making process may better describe the impact of numerical and textual components of reviews. The recognized impact of eWOM on firm's performance also stimulated research regarding online reputation management strategies. According to Proserpio & Zervas (2017), the practice of publicly responding to consumer reviews has emerged as a popular reputation management strategy, which can positively impact of review ratings at the cost of fewer but more detailed negative feedbacks. This implies a trade-off for managers: by responding they can expect to prevent some users to leave a negative review (with the result of inducing a higher average rating), but some users will be even more motivated to leave longer and detailed negative reviews because they know that their reviews will be read and examined. The way eWOM is evolving in modern marketplace has been recently investigated also in a special issue of the *Journal of Business Research* (Liu, Jayawardhena, Shukla, Osburg, Yoganathan, 2024).

In parallel to human-based recommendations, either in the form of traditional or electronic word of mouth, the rapid development and adoption of artificial intelligence (AI) has transformed and is transforming today's marketplace, where new forms of recommendations based on AI are pervasive. Longoni & Cian (2022) have introduced the term "word of machine", providing evidence that people believe AI recommenders are more (less) competent than human recommenders to assess utilitarian (hedonic) attribute value, and, as a consequence, "individuals are more (less) likely to choose AI recommenders when utilitarian (hedonic) attributes are important or salient" (Longoni & Cian, p. 92). They also stress that such word of machine effect depends on beliefs that do not necessarily correspond to the reality: humans are not necessarily less competent than AI at assessing utilitarian attributes, neither AI is necessarily less competent than humans at evaluating hedonic attributes. Similarly, Chen, Li, Liu, & Wang (2023) have focused their analysis on the effectiveness of AI chatbot in the context of purchasing search vs. experience products. Their findings highlight that AI chatbot can trigger higher purchase intention than human in the context of search products, while the opposite happens in the case of experience products.

Additional related literature includes the work of Hernández Ortega & Lucia-Palacios (2023), who introduced the term "word of voice" by exploring the role of smart voice assistants (SVAs) as purchase recommenders. Furthermore, Paul, Ueno, & Dennis (2023) have discussed the multidimensional benefits and potential pitfalls of using AI based on Chat Generative Pre-trained Transformer (ChatGPT). Resistance to the use of algorithm advice is well documented in the context of human resource selection, even if they are helpful to make better decisions (Rabinovitch, Budescu, & Meyer, 2024), as well as in healthcare services (Zhang, Tan, & Lee, 2024). Hollebeek, Menidjel, Sarstedt, Jansson, & Urbonavicius (2024) also explored the impact of AI on consumer engagement.

Overall, the comparison between human and AI recommendations and, more in general, the way consumers and AI interact, has opened a new intriguing stream of research, calling for novel cross-disciplinary theoretical approaches and methodologies (Pentina, Xie, Hancock, & Bailey, 2023).

Purpose of the paper. The ongoing research project described in this paper stems from the goal of comparing the way different form of human and AI-based recommendations may influence consumer behavior. The research focuses on the hospitality sector, where both utilitarian and hedonic values are recognized as important in travelers' assessments (Kim, Kim, Jhang, Doust, Chan, & Badu-Baiden, 2023), the use of eWOM is well established and a large amount of data is easily available through online platforms (such as, for example, TripAdvisor, booking.com). In particular, the research involves (at least) two steps:

- the first step is based on secondary data collection and focuses on the comparison between textual and numerical components of eWOM and on the efficacy of AI in predicting the numerical ratings from a textual input. Such research aims at establish, on the one hand, the coherence (or not) between textual and numerical reviews, and on the other hand, the potential of AI tools in predicting human suggestions. Apart from investigating the average consistency of textual and numerical contents, the research also aims at exploring which factors can affect AI prediction errors.
- the second step is based on experimental analysis, and aims at establishing the relative importance of different types of information on consumer behavior (textual vs. numerical components of online reviews and human-based online reviews vs. online reviews derived from AI tools).

The present manuscript focuses on the first step, describing some preliminary evidence based on a pilot sample. The main purpose of this paper is to investigate the impact of AI-driven review analysis on hotel management practices and, more generally, decision-making processes. Additionally, the study aims to assess the potential benefits and best practices associated with integrating artificial intelligence tools, such as ChatGPT, into the analysis of reviews within hotel management. This investigation is closely tied to customer relationship management within the hospitality industry.

Methodology. The dataset was obtained from booking.com, a widely used online hotel reservation platform known for its extensive collection of hotel listings, customer reviews, and user ratings worldwide. Ten customer reviews and respective ratings were selected for 20 three- and 20 four-star hotels. Half of the hotels were in Rome and the other half in London. We chose Rome and London because they are prominent cities and wanted to evaluate ChatGPT recommendations for Italian, our mother language, and English, a global language. For Rome, we selected reviews based on top choices, Italian language, and most recent reviews. For London, we selected reviews based on top choices, English language, and most recent reviews. Given that the reviews on booking.com include both a positive and negative textbox, we selected cases where the reviewer filled in both positive and negative comments. Hotels with insufficient reviews were excluded from the database.

The database was created using a three-step process. First, we included the 400 textual and numerical reviews by Booking.com customers. Then, we provided ChatGPT with the text reviews of the hotels and asked it to assign a numerical rating from 1 to 10 (where 1 is negative and 10 is positive) based on the content of each review. Third, we provided

ChatGPT with the textual reviews for each hotel, consisting of 10 reviews per hotel, and requested it to generate a concise summary within a 400-character limit for each hotel.

The textual (summary) reviews generated by ChatGPT are intended for use in an experiment where a sample will evaluate the hotel recommendations produced by ChatGPT. These reviews are not included in the present report but will be used in a subsequent laboratory experiment. This study is indeed an ongoing research project. The design of the laboratory experiment will comprise two treatments. In both treatments, participants will receive a textual and a numerical review, obtained from ChatGPT, for each of the 20 hotels (Italian and English languages will continue to be separately tested). Specifically, the summary review for each hotel will serve as textual review, while the average rating (from 1 to 10) assigned by ChatGPT (based on the ratings provided by ten customers on Booking.com for each hotel) will be considered as the numerical review. However, in one of the two treatments, subjects will be specifically informed that the reviews were generated by an Artificial Intelligence, namely ChatGPT, while the other treatment will not provide this information. A pre-registration of the study design will be conducted to ensure transparency and consistency in the experimental procedure.

We utilised ChatGPT3.5 for this task (accessed in February 2024). ChatGPT-3.5, as defined by itself, “is a variant of the GPT-3 (Generative Pre-trained Transformer 3) model developed by OpenAI. GPT-3.5 is an advanced language model capable of generating human-like text based on the input it receives. It builds upon the architecture and capabilities of its predecessor, GPT-3, with improvements in various aspects such as language understanding, coherence, and generation of contextually relevant responses”. Also, “ChatGPT-3.5, like its predecessor GPT-3, is based on a transformer architecture. Transformer models have revolutionized natural language processing (NLP) tasks by their ability to capture long-range dependencies in text data efficiently. The transformer architecture relies heavily on attention mechanisms, allowing the model to weigh the importance of different words or tokens in a sequence when processing input data. This enables the model to capture complex patterns and dependencies within the text, making it particularly effective for tasks such as language understanding, text generation, and translation. GPT-3.5, being based on this transformer architecture, inherits its capabilities and improvements from advancements made in the field of deep learning and NLP. The model is trained using a massive amount of text data, enabling it to learn rich representations of language and produce coherent and contextually relevant responses to a wide range of input prompts.”

Preliminary results. The mean rating estimated by ChatGPT for Rome hotels was 6.81 ($sd = 1.32$, $min = 2$, $max = 9$, median value = 7), whereas for customer ratings, the average value was 7.51 ($sd = 1.90$, $min = 1$, $max = 10$, median value = 8). ChatGPT rating is lower by about one percentage point ($p < .001$; Mann-Whitney U test).

For London, ChatGPT mean rating was 6.58 ($sd = 1.57$, $min = 1$, $max = 10$, median = 7), whereas customer mean rating was 7.57 ($sd = 1.82$, $min = 1$, $max = 10$, median = 8). Again, the difference was around one percentage point in the same direction ($p < .001$), indicating a certain consistency between the two language sets.

Also, 28% of customer ratings corresponded to ChatGPT ratings for Rome (56 out of 200; $p < .001$; one proportion z-test against 50–50 expected distribution). This percentage lowered to 23.5% (47 out of 200) for London ($p < .001$). This suggests that ChatGPT is able to precisely predict customer ratings from the text of reviews in about 1/3 of the cases.

The next step of the research is extending the dataset to explore if results remain consistent and to investigate the factors affecting the degree of AI prediction errors.

Overall, these preliminary findings suggest that ChatGPT evaluates customer ratings differently when compared to direct ratings given by the customers in their reviews of hotels. In both language sets, ChatGPT tends to assign lower ratings, and the difference is significant. This raises the possibility that ChatGPT may have difficulty interpreting customer text reviews accurately. However, the result might also highlight the presence of a bias in how customers represent their text reviews with a rating, leading to over- or underestimation compared to their textual assessments (Kahneman, 2012). This should be investigated further in future research.

Research limitations. The first premise is that the study is in a very preliminary phase, and the results here presented are obtained with reference to a small sample of data. ChatGPT did not systematically provide the same rating during data collection when given the same review. We have decided to take the first rating provided for consistency. Additionally, we have observed differences in ratings obtained in February compared to attempts made with a few reviews in December. The model's training data could influence this. Furthermore, when asked to summarise within the 400-character limit, ChatGPT did not always consistently adhere to the limit. On a few occasions, it happened that after repeated requests to respect the limit, ChatGPT froze and repeated the same statement without adhering to the limits. At the same time, potential risks associated with ethical and privacy considerations related to the use of AI technology can be considered as well.

Managerial implications. The managerial implications are primarily concerned with the use of AI in the area of online reputation management. AI provides a powerful tool that can assist hotel managers in identifying trends and patterns in guest preferences, thereby providing valuable insights to prioritize areas for improvement with the ultimate goal of improving guest satisfaction and business performance. For example, AI can help to classify and rank reviews not only by means of numerical scores, but also by textual contents, as the two dimensions might not always be coherent. Overall, this can improve the ability of hotel managers in profiling different groups of reviewers and customers.

At an aggregated level, online review platforms (such as booking.com) may consider to complement the information regarding average numerical scores with short textual summaries of reviews, generated by AI from an overall content analysis of the various reviews. To this end, AI's ability to analyze large volumes of reviews in real-time would be critical

in facilitating prompt adjustments and improvements. Moreover, it is important to understand if customers would trust such AI based recommendation.

Since the analyzed case study concerns the hospitality sector, implications are intended to hotel managers and operators, but might as well extend to other products and e-commerce platforms.

Originality of the paper. The paper proposes a comparison of numerical ratings given by a consumer in online reviews with the numerical ratings that AI would assign to the textual review provided by the same consumer. First, this allows to explore the relationship, and the coherence, between two dimensions of eWOM (textual and numerical) that have been often analyzed separately in previous literature. Second, by employing AI such as ChatGPT to predict the score of human textual comments, this work fits into the recent strand of the literature that compares human based recommendations with AI based recommendations. To this extent, the findings are the basis for a second step of the project, that will complement the current analysis with an experimental approach focusing on the way different types and dimensions of recommendations are perceived and used by individuals during their decision-making process.

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Promoting (un)conscious purchasing behaviors and choices in favor of sustainability

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Abstract

Proposing itself with a deliberately provocative title, this work intends to understand what are the most effective actions to transform sustainable choices into consolidated habits, paradoxically "unconscious", i.e. automatic, without cognitive effort or sacrifice. Sustainability is investigated through an interpretation linked to the behavior of demand, starting from the basic assumption that without an active contribution from demand, the efforts made by companies could be in vain. In order to play an active role, however, it is essential that consumers are enabled to access a sustainable offer, especially in the points of sale where consumption choices translate into behaviours. The connection between intentions and actions, however, is not at all obvious when talking about complex choices for which willpower alone is not sufficient. This is why we resort to "nudging", the gentle push which through the information architecture and the structure of choice helps the individual to make sustainable choices effortlessly, reducing the gap between "saying" and "doing". Measuring this gap and starting a strategic reflection on the most effective tools to promote sustainable choices and behaviors are the specific objectives of this work.

Keywords: sustainability; shopper marketing; conscious purchases; nudging; choice architecture.

Framework of the research. *Many issues related to globalization has brought sustainability to the forefront of 21st-century discourse (Schaefer & Crane, 2005). The term "sustainability" began to appear in academia in the 1980s, but has evolved considerably since then (Portney, 2015): initially used to exclusively identify the scarcity of natural resources (Kuhlman & Farrington, 2010), it has now expanded to three pillars: social, economic, and environmental sustainability (Purvis et al., 2018). Despite sustainability being one of the main objectives pursued by the United Nations through the creation of the Sustainable Development Goals (SDGs) (Whittingham et al., 2023), the efforts made to achieve these objectives are insufficient (United Nations, 2023). Several authors (Sheth et al., 2011) have considered the responsible behavior of individuals as a powerful driver of sustainable development and even though consumers look for companies that reflect their values (Anuradha et al., 2023), few opt for more sustainable behaviors, especially if they have to pay higher prices or accept reduced performance (Olson, 2013). For this reason, companies have begun to employ marketing strategies that encourage consumers to make sustainable choices (Anuradha et al., 2023).*

Given that improving consumer behavior involves targeted interventions in points of sale (Wansink, 2017), the latter become fertile ground for industrial and commercial companies to use shopper marketing levers in a sustainable manner to push shopping choices towards products that have a positive impact on both people and the planet. From this perspective, shopper marketing, defined as a set of actions aimed at influencing the individual during his decision-making process (Shankar, 2011), has social value when directed towards promoting conscious and sustainable consumption choices (Bellini, 2023). Including the path-to-purchase in interventions that support health confirms the centrality of the distributor and accredits the point of sale as a context dedicated to value creation (Yoder et al., 2021). The effectiveness of this approach, however, is by no means expected as it presumes a paradigm shift where the ratio of traditional economics co-exists with the principles of behavioral economics borrowed from cognitive psychology and neuroscience.

Sustainable choices are not easy to make nor, above all, to carry on stably in the long term as they require a cognitive effort that eludes conscious control and surrenders in the face of a willpower that is by definition not inexhaustible. Behavioral economics tools are useful in these situations as they can better grasp the mental mechanisms that regulate the decision-making process and guide individuals towards solutions that enhance their well-being, both individually and collectively.

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In this context, the promotion of sustainable behaviors is increasingly a key area of application for nudging (Bergram et al., 2022). Nudging, defined by Thaler and Sunstein (2008) as “any aspect of the choice architecture that alters people's behavior in a predictable way without forbidding any options or significantly changing their economic incentives” originates from the concept according to 95% of the choices made daily are not rational (Bargh et al., 2001; Caraban et al., 2019), but the result of the application of heuristics and mental shortcuts that support the decisions making by reducing the necessary efforts to process information (Shah & Oppenheimer, 2018; Caraban et al., 2019). The literature on the application of nudging in the field of sustainability is expanding (Mont et al., 2014; Lehner et al., 2016; Trewern et al., 2021; Mirbabaie et al., 2022) and nudges are increasingly recognized as important and effective tools for promoting society's sustainable behaviors. Despite some limitations, their advantages appear to outweigh those of traditional marketing strategies (Gonçalves et al., 2021).

The effectiveness of nudging for sustainability has its roots in the “intertemporal” nature of sustainable choices (Thaler & Sunstein, 2008). Many sustainable behaviors require a sacrifice today in exchange for a future benefit, which is not guaranteed and may not necessarily fall within an individual's sphere. The misalignment between (individual) sacrifices and (collective) benefits, together with the absence of immediate feedback, makes sustainable choices difficult to make and often constitutes a disincentive to long-term stability. Nudging can best demonstrate its effectiveness in this area since it acts on individuals' emotions, which are more reactive in such situations where willpower is reduced due to uncertainty and difficulty in quantifying personal return.

The existence of a gap between 'intentions' and 'behaviors' (Sheeran & Webb, 2016) highlights the volatility of willpower and the necessity of nudges to guide individuals towards “unconsciously” preferring more sustainable options. The ultimate goal of nudging is to ensure that socially optimal choices are made effortlessly and gradually transform into consolidated habits. This should also be the final goal of companies that must promote “gentle nudges” towards their shoppers in points of sale.

Purpose of the paper. This work intends to measure the ability of retailers to effectively promote sustainable behavior on the demand front, starting from the hypothesis that, if a retailer is a “good nudger”, its customers will have a reduced intention-behavior gap, i.e. it will be composed of aware individuals who declare to and buy sustainable. Through the analysis of the sustainable profile of consumers, we will therefore try to understand to what extent the points of sale and shopper marketing strategies used in a “nudging” optic impact on sustainable choices and contribute to reducing the intention-behavior gap. The underlying reflection, which inspires the entire research path, is to understand what factors stimulate sustainable purchasing choices and how such choices, repeated over time, can turn into sustainable behaviors in favor of the planet and people, even outside the shopping context.

Methodology. Investigating sustainability is a complex methodological challenge as it requires the a priori identification of criteria and parameters useful for defining what is sustainable from the point of view of the demand and businesses. We land on a ground that is undergoing profound transformations, also from a regulatory point of view, which does not yet have a defined border or standard languages. In order to employ a methodology that is as robust as possible and based on objective elements, we relied on the NielsenIQ (NIQ) databases from which we obtained timely and statistically significant information both on the demand front, through the Consumer Panel, and on the offer front, through Retailer Measurement Service (RMS) data which will help us interpret the insights collected from interviews administered to retailers. The research therefore develops along two tracks.

On the **demand side**, consumers are mapped based on their sustainable purchasing behavior using socio-demographic, attitudinal, and behavioral profiling. The Consumer Panel (CP) of NielsenIQ (NIQ) is used as a tool to collect information from syndicated surveys and data on the real purchasing behavior of sustainable products, measured through the classification of the Imagino database (NielsenIQ and GSI Italy). The panel gathers data from more than 9,000 families, which are representative of the Italian population and are periodically interviewed about their socio-demographic characteristics and actual purchasing behavior. The interviews, conducted through the panel, enable the collection of data solely related to the topic of interest, following a 'single source' approach. This means that the families who answer the questionnaires are the same ones who record their purchases. In this way, panelists can be segmented using socio-demographic variables, based on their actual purchasing behavior (and not declared), and on their declared attitudes.

For the purposes of this research, the segmentation on the CP classifies families according to two parameters:

- what they claim to do in general with respect to sustainability (dimension of “saying” - intentions), identified through a set of specific questions aimed at measuring the attitude towards different areas of individual (nutrition), social (community and territories) and environmental well-being;
- what they buy, identified through the share of products in their cart with a specific set of attributes related to sustainability (dimension of “doing” - behaviors).

Individuals are measured based on their purchasing behavior of sustainable baskets. These baskets are identified by NIQ through the selection of products that convey the three specific declinations of sustainability: individual well-being, environmental well-being, and social well-being.

The analysis of the demand will be complemented by an **analysis of the supply** through the administration of a structured questionnaire aimed at mapping the “sustainable” profile of retailers based on shopper marketing actions aimed at promoting conscious purchases and behaviors in the areas of individual, social and environmental well-being. Specifically, each company will be studied with respect to:

- corporate governance (commitment and disclosure)

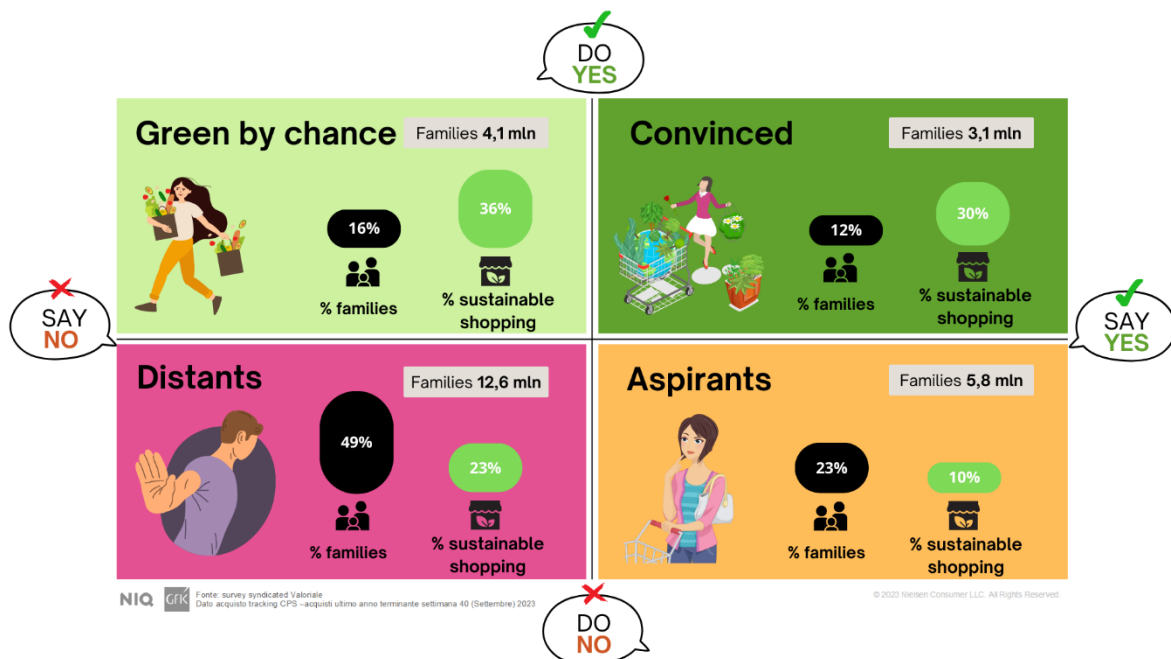
- «conscious shopper marketing» actions divided by touch point (assortment, packaging, prices and promotions, space, communication in and out of store, loyalty program), with related performances and measures.

What companies declare through the questionnaire will then be integrated and compared with the study of the performance of the distribution brands in regards of the sustainable baskets identified. Through NIQ's Retailer Measurement Service, data will be obtained on the sustainable baskets of 45 Italian brands in relation to assortment, sales, and promotional impact.

The intersection between the analysis of demand and the analysis of the supply allows us to understand if there is a correlation between the sustainable profile of consumers and the distribution performance of the brands in terms of sustainable baskets. In other words, it investigates whether the presence of clusters of virtuous consumers is also a result of retailers' commitment to making sustainable options available and accessible.

Preliminary results This work presents the results of the first phase of the research, which analyzed the demand, as data collection for the analysis of the supply is currently on-going. The NielsenIQ Consumer Panel was questioned regarding the dimension of “saying” (attitude towards sustainability and intentions to purchase sustainable products) and “doing” (actual purchase of sustainable products), resulting in the identification of four clusters of shoppers (Figure 1).

Figure 1: Four clusters of shoppers



Source: Authors' elaboration based on NIQ data

The upper part of the matrix displays two clusters, namely 'green by chance' and 'convinced', which represent families that purchase sustainable products (“they do yes”), but with a different level of awareness. While the “convinced” cluster reflects intentional purchases, the “greens by chance” cluster seems to make sustainable purchases unintentionally. It is interesting to understand what stimulates this behavior which we could define as “unconscious”. The two clusters located in the lower part of the matrix (“distant” and “aspirants”) incidentally purchase sustainable products but for different reasons. The “distant” do it by choice: they do not believe so strongly in sustainability and consequently their contribution to sustainable spending is modest. The “aspirants”, on the other hand, would like to be able to buy more sustainable products, but they don't and it's interesting to understand the reasons.

Socio-demographic and behavioral data resulting from the Consumer Panel allow us to delve deeper into the reasons underlying the sustainable profile of the clusters and to draw useful indications to guide the strategies of the companies interested in operating the levers of shopper marketing to promote conscious purchases at the point of sale. Our attention is initially directed towards the most contradictory clusters, namely the “aspirants” and the “green by chance”, where there is a discrepancy between intentions and behavior.

“Aspirants” undoubtedly represent the segment of greatest interest for companies given their unexpressed potential. We are talking about 5.8 million families, equal to 23% of the Italian population, which only account for 10% of sustainable spending, despite the declared sensitivity towards sustainability.

If we deeper analyze the behavioral profile of the “aspirants”, we find some of the reasons that explain their positioning. The cluster is composed by families who pay great attention to prices and promotions but are also attracted by the aesthetic stimuli in point of sale and by novelties, sensitive to industrial brands, preferably local ones. They inform

themselves and are attentive to what they eat, they seek simplicity and freshness through supply chain and production guarantees, their food spending tends to be basic and mainstream.

What could be the most effective shopper marketing levers to activate this cluster? Prices and promotions should certainly not be underestimated, but within the context of a rich and captivating offer and an engaging shopping experience. Investigating the barriers to purchase of "aspirants" is therefore fundamental to understand which shopper marketing levers to use to engage this target and to being able to translate "good intentions" into "good behavior".

The "**greens by chance**" represent an equally curious target to seek for the reasons behind their "unconscious" sustainable purchases. Represented by 4.1 million Italian families, equal to 16% of the population, they contribute to 36% of the overall sales volume of sustainable shopping, a percentage that exceeds that of the "convinced". The Consumer Panel frames it as a rational and dynamic target, which distances itself from "green" behaviors, attentive to the quality of the products, regardless of sustainability certifications. They purchase premium products with high added value, selecting plant-based alternatives, healthy and few indulgent products. Their "sustainable" cart therefore seems to be more justified by the search for nutritional quality, therefore, not necessarily sustainable products in terms of packaging or processes. Individual well-being prevails over environmental well-being, which is why they are weaker in terms of interests and declarations. Since this is a rational target looking for practicality, they opt for points of sale with a quality but also convenient offer and seem willing to sacrifice the sustainability of the packaging for better quality and use of the product itself. It is therefore not surprising that they are good customers of the e-commerce channel.

The "**convinced**" represent the ideal target of all companies: individuals who approach sustainability in a conscious manner and also do so in their purchasing choices. They still constitute a modest portion of the Italian population (12% of Italian families, equal to 3.1 million families) but their contribution to the total amount of sustainable spending is substantial (30%). From the analysis of the Consumer Panel data, a rational profile emerges, which addresses spending in a prudent manner but at the same time open to exploration and impulse. Oriented towards a balanced diet, they seek premium products with a high service component, in fact in their cart they have many plant-based alternatives, few indulgent products and favor products with sustainable packaging. Sensitivity towards environmental well-being is the element that distinguishes them from the previous cluster, which on the contrary is more focused on individual well-being mainly limited to the world of nutrition.

Finally, the last cluster, the "**distant**" ones, constitute the ground on which all companies should work: 12.6 million families, almost half (49%) of the Italian population, who follow a lifestyle and food style that do not prioritize individual and environmental well-being. More attentive to saving money compared to the nutritional quality of the products, they declare themselves unwilling to pay a premium price for sustainable products. Given the large number of this target and the negligible impact on sustainable spending (23%), they certainly cannot be ignored by companies who must ask themselves how to intercept them to educate them about sustainability and make them more aware of the impact of their purchasing choices on the environment and the society. It certainly won't be a quick path nor a feasible path through just the shopper marketing levers. Observing the distribution realities where this target has a smaller presence will certainly help to identify the most effective governance models and strategies to reduce the size of the cluster.

The analysis of demand reveals a reflection on the role of shopping places in this context. Specifically, we question to what extent the points of sale where consumers shop for groceries can influence the "doing" dimension, in consideration of the role that distributors assume in consumption and purchasing choices and the ability to influence shopper marketing levers (Shankar 2021, Bellini 2023).

The analysis conducted through the Consumer Panel enables us to identify the preferred purchasing channels for each target audience, as well as the stores they habitually frequent for grocery shopping. This information, when integrated with the analysis of the offer, helps us to answer the previous question and to get closer to the ultimate objective of the study: understanding the most effective strategies to promote sustainable purchases in retail stores.

Currently, while awaiting the results of ongoing research, we offer a few reflections. For instance, when considering the "green by chance" cluster, it is worth reflecting on whether sustainable purchases are encouraged by the retailer they choose. Consumers may unconsciously purchase sustainable products due to their familiarity with accessing a commercial offer that includes sustainable options, which are often promoted through shopper marketing techniques such as display space, prices, and promotions.

Equally interesting is the profile of the "aspirants", those who would like to buy sustainable but don't. The reasons could be linked to socio-cultural factors (e.g. low income, poor culture, and attention to sustainability) but also to barriers on the supply side. For example, they could frequent stores that do not have an adequate or accessible assortment of sustainable products in terms of economic convenience.

A similar argument can be made about the "distant" cluster, for whom however a cultural obstacle must first be removed which makes them not very sensitive and motivated towards the purchase of sustainable products. Certainly, on these targets the levers of price and promotions could take on a greater importance than the targets of the "convinced" and "green by chance", for whom it might instead be more appropriate to work on the attractiveness of the offer and on its in-store valorization.

In summary, examining the profiles of the four clusters enables us to identify the most effective shopper marketing levers to engage with individuals based on their attitudes ("saying") and behaviors ("doing"). This is an essential condition for companies who wish to undertake a path of "conscious shopper marketing".

Research limitations. *The present study is not limitations-free. Firstly, it is an ongoing research, so the results should be considered preliminary. Additionally, difficulties were encountered during the compilation of the self-assessment questionnaire of the retailers' sustainable profile, due to the lack of an evaluation system and a commonly recognized language shared by the participants. Finally, this study is an initial and exploratory part of a larger project. The research will be repeated annually to mitigate the current limitations and identify a language that is not only shared by project participants but also functional for drafting sustainability balance sheets according to new regulations. Finally, monitoring demand behavior over time can help to eliminate cyclical elements from the results and provide valuable insights for management.*

Managerial implications *This study presents important findings to guide companies in developing sustainable strategies and practices. It also addresses the preparation of social balance sheets, which will be mandatory from 2026 for companies with a turnover exceeding 50 million euros and will have to include a section dedicated to “consumers and end users”.*

It is only by starting from the knowledge of the demand and its consumption and purchasing behavior that it is possible to understand what the most effective actions are to engage with individuals and make them a driver of sustainability alongside businesses. The mapping of the demand presented in this study allows companies to understand the profile of their shoppers and consequently identify the marketing levers to activate based on the target segment they intend to address. Actions aimed at stimulating sustainable shopper behavior can become a field of shared action between industry and distribution, in the perspective of a pre-competitive vision of sustainability.

The study's relevance is not only strategic; numerous studies highlight a direct correlation between companies' economic performance and their commitment to sustainability. Furthermore, the ability to stimulate actions that generate a positive impact for individuals, society, and the environment is crucial in supporting the social role of the fast-moving consumer goods supply chain. Additionally, these results may be of great interest to institutions and public policies aimed at promoting societal and national well-being.

Originality of the paper. *To the best of the authors' knowledge, this research is the first attempt to segment demand in terms of sustainability based on the variables of “intention” (the dimension of “saying”) and actual behavior (the dimension of “doing”). This attempt was made possible by the use of NielsenIQ databases (Consumer Panel and RMS), which provide objective measures and allow us to overcome the accuracy limits of previous studies based on self-assessment and self-reporting systems. Additionally, this study offers a unique perspective on sustainability for two main reasons. Firstly, it examines the phenomenon from a demand perspective, which sets it apart from most studies that focus on supply and production processes. Secondly, it analyses marketing tools that are used to stimulate demand using behavioral economics frameworks. The application of nudging in shopper marketing to encourage sustainable consumption and purchasing behavior is a relatively unexplored area of research. However, the writers believe that it holds enormous potential on the managerial, social, and institutional fronts.*

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The Family Caregiver Experience in Palliative Care Pathways: Development and Validation of a Multidimensional Approach

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Abstract

The caregiver plays an essential role in specific phases of the long-life journey of people, especially in delicate moments as the end-of-life. They serve as a central point in supporting and caring for patients in the terminal phase. Exploring the experience of family caregivers along the end-of-life pathway is crucial to ensure a respectful and high-quality experience with healthcare services, not only for terminal patients but also for their family caregivers. The aim of this study is to validate a multidimensional approach to investigate this experience through a co-design process involving professionals and caregivers.

Dimensions enabling the exploration of the caregiver's experience along the end-of-life path were identified through a literature review. The framework was shared with professionals involved in end-of-life care pathways. Through a mini-Delphi process conducted with both professionals and caregivers, the priority levels of these dimensions were assessed, and any differences and similarities in the perception of more or less prioritized dimensions were investigated across the board. The results underscore the importance of needs, psychological support, and communication in enhancing assistance to family caregivers throughout the end-of-life care path.

Key words: *End-of-life, Experience, Caregiver, mini-Delphi study*

Framing of the research. *In a context characterized by rapid demographic, socioeconomic, and familial evolution, alongside prevalent conditions of advanced chronic illness and an increase in individuals requiring long-term care, palliative care becomes strategic in ensuring quality and continuity in the care pathways of the sick. According to the definition provided by the International Association for Hospice & Palliative Care (IAHPC, 2017), palliative care encompasses the prevention, identification, assessment, and management of physical issues, including pain and other debilitating symptoms, psychological distress, spiritual discomfort, and social needs, providing support to family members and caregivers during various stages of the patient's illness and in the bereavement phase. Definition from The National Hospice and Palliative Care Organization defined the palliative care as "a specialized approach to the treatment of patients with a serious or life-threatening illness. The goal of palliative care is to provide relief from the symptoms, pain and stress of serious illness. It is also designed to improve the quality of life of both the patient and the patient's family. Palliative care is provided by a team of specialists who are trained in assisting patients and their families through what can be the most difficult time in their lives. Members of the team typically include physicians, nurse practitioners, social workers, and spiritual care coordinators. Some palliative care teams have physical and speech therapists, pharmacists, dieticians and trained volunteers." As evident, palliative care is not only about healthcare services, but also social care, third sector activity and other kind of services for patients and their family.*

This multi-stakeholder and multi-disciplinary approach applies to a specific challenging period called end-of-life, which refers to the critical timeframe of an individuals' life-long journey after diagnosis of a life-limiting illness. It "preceding an individual's natural death from a process that is unlikely to be arrested by medical care" through bereavement (Hui et al., 2014).

Italy is at the forefront in Europe with Law 38/10, recognizing palliative care as a right for terminally ill patients. Recent socio-health system development programs, supported by the PNRR, emphasize the importance of such care and the need for integration among the various stakeholders to provide adequate assistance in different care and support contexts. Palliative care demands high levels of assistance and, consequently, strong involvement of informal caregivers (Kim et al., 2023). The latter represents a fundamental resource in many European countries, especially in those in the south, including Italy, characterized by a "familialist" welfare system (Esping-Andersen, 1990), commonly referred to as "countries with strong family ties" (Saraceno, 2010).

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The caregiver responds to various social and health needs of the person they care for throughout the palliative care path, dealing with symptom management (Funk et al., 2015), medication administration (Wilson et al., 2018), emotional and social support for the patient, often ensuring the person's continuation in their own living environment (family and social).

Informal caregiver assistance constitutes a multidimensional caregiving work in practical/organizational, emotional, relational, and ethical terms (Brenna, Di Novi, 2015, 2016), with possible significant interferences with the performance of other professional, family, and parental roles (Fahle, McGarry, 2017). Informal caregiving activities, over time, can wear down the physical and psychological capacities of the caregiver, even leading to a crisis in the choice of home care (Vellone, 2021). The well-being of caregivers has a significant impact on patient outcomes, service functionality, and the overall sustainability of services, affecting the caregivers' productivity, their participation in service delivery, their collaboration in the value creation, and their contribution to service sustainability. Thus, it is important to recognize the person behind the definition of caregiver, and his/her needs, preferences, perception of his/her role, of the experience with services provided to them and to patients, and of the value they receive and co-produce together with patients and providers. Investigating caregivers' experience along the palliative care path is fundamental to understanding end-of-life services' functioning, better managing them and improving their quality, not only when provided to patients but also to caregivers.

In this study, we believe that the key to assessment lies in understanding the dimensions relevant to the caregiver.

Purpose of the paper. In light of these premises, our goal is to investigate the perception of the most or least prioritized dimensions by caregivers and professionals, with the ultimate aim of validating a multidimensional approach to explore the caregiver's experience along the pathway of palliative care.

Methodology. A review of the literature has been performed to identify the dimensions enabling the exploration of the caregiver's experience along the end-of-life path were identified through a literature review. First, a comprehensive list of pertinent keywords and search terms was defined by a team composed by three researchers. The keywords were related to: (i) the phase of the journey: end-of-life, (ii) the target of interest: caregivers, (iii) the object of study: the experience with services. The selected keywords and the related algorithm for the preliminary search on scientific databases was:

("end of life" OR "palliative care" OR "terminal care") AND
(("caregiv*" OR "famil*") OR support) AND
("experience" OR "satisfaction").

A few exploratory searches in Google Scholar were conducted, using the above-mentioned general terms in order to:

- Identify relevant background documents,
- Review any recent, highly-cited articles related to the topic (as available),
- Read through the top results for a couple different searches, paying particular attention to the language used to define and describe the topic,
- Take notes on relevant findings to inform the research,
- Go back and modify your research question and scope as useful.

The search was executed across the chosen databases, utilizing the identified keywords and search terms. Applying inclusion and exclusion criteria, we refined the results and focused on the most pertinent articles. The research team developed a structured data extraction form to gather relevant information from each selected study, based on an excel file. The final step was the summary and synthesis of the key findings from each study, and a workshop for discussing the results with practitioners from the Palliative Care Functional Unit of Livorno (Tuscany, Italy).

A mini-Delphi study was conducted in collaboration with a purposive sample of caregivers and professionals involved in the palliative care services in Tuscany Region. Since a minimum panel of 15–20 experts is recommended to ensure sufficient contributions in a Delphi process (Hasson et al., 2000), the research team set to 20 members the minimum number of participants. The aim was to investigate the perception of professionals and caregivers regarding the relevant dimensions of experience, emerged from the literature analysis. The data were used to understand any differences and similarities in the responses provided by the two groups of participants. The Delphi process was carried out through the distribution of an online questionnaire. The questionnaire included both open-ended and closed-ended questions. Respondents were asked to rate each dimension and sub-dimension on a scale from 1 (not important) to 10 (very important). Additionally, they were asked to prioritize the dimensions from most to least important. The open-ended questions, which were optional, allowed participants to provide suggestions regarding each dimension or sub-dimension.

The panel members received via e-mail the invitation to participate in each round of the Delphi study. Participants received one or more subsequent follow-up e-mails, as reminders, when necessary. Two Delphi rounds were expected. However, the Delphi process did not require further rounds to reach a common final decision as the results showed consistency among the two groups of participants at the first round. Consequently, the results were validated with the professionals.

Quantitative data from the closed-ended questions of the Delphi study were analysed performing descriptive statistical analyses and t-tests with the use of SAS software. The qualitative comments left in the open-ended questions were analyzed using two flexible and open qualitative methods (Silverman, Gobo, 2002): bottom-up content analysis (Krippendorff, 2018) and polarity analysis of comments in positive, negative, neutral, and mixed categories. The first method allows for

the discovery of new categories and exploration of the data in detail, identifying themes and categories during the analysis phase, without any preconceptions. Therefore, content analysis enables the identification of categories to deepen the data analysis and report the results. The other method, on the other hand, allows for the identification of comment polarization based on the words and expressions used in the text.

Preliminary Results.

Review of the literature

Currently, despite little consensus on what are the dimensions of caregivers' experience with end-of-life (Ringdal et al., 2002), some scholars have identified several of them. In general, these include the provision of information, communication, practical and emotional support (Dy et al., 2008; Grunfeld et al., 2008). Several data collection tools have also been developed to measure patient and/or caregiver satisfaction and experience in the context of palliative care, delivered both in hospice and at home (Grunfeld et al., 2008; Kristjanson, 1993), but none of them assesses all domains. Additionally, there are few validated survey instruments for the wide range of palliative care contexts or for different geographic regions (Abernethy et al., 2008; Dy et al., 2008).

To evaluate the quality of "overall" care (Tang et al., 2014) and wellbeing of caregivers in this last phase of life of their loved ones, dimensions such as the following ones have been used: Psycho-physical (e.g., pain management); Social and relational (e.g., respect and dignity, relationship with doctors); Environmental (e.g., home, hospice room, hospital) (Daly et al., 2013; Breibart et al., 2015; Zimmerman et al., 2014; Zhang et al., 2012).

We found four questionnaires mostly used in the research on the topic, namely:

- CAHPS, provided and used by The Centers for Medicare & Medicaid Services (CMS); Agency for Healthcare Research and Quality (AHRQ); United States Department of Health and Human Services,
- CANHELP, provided and used by CARENET Canadian Researchers at the End-of-Life Network. (n.d.). CANHELP Tool.
- CBI: Caregiving Burden Inventory, provided and used by Novak, M., & Guest, C. (1989)
- ZBI: Zarit Burden Inventory, provided and used for interviews by Chattat et al.; (2011)

Below there is a detailed summary of the dimensions identified from the literature to explore the experience of caregivers of patients in palliative care, presented to professionals and on which the participants expressed their views in the participatory subsequent process:

- Needs
 - o Physical, emotional, social, and spiritual
- Responses
 - o Physical, psychological, and social support and assistance
 - Specific instructions for addressing the patient's physical symptoms and how they have adapted to the patient's physical needs
 - Presence of a social support network for caregivers (including family members, friends, or specific support groups for palliative care). Access to the support network and how it has influenced their emotional well-being during the palliative care journey
 - How they have coped with and managed their emotions (anxiety, stress, etc.), whether they have received psychological support to address them
 - o Promptness in providing appropriate responses (to social, psychological, and physical needs)
 - o Continuity of responses to pain, symptoms, social, and psychological aspects
- Responses in the Home Context
 - o Perception of home visits in terms of the quality of care received
 - o Perception of the frequency and timing of each visit
- Availability in case of need
 - o 24/7 telephone availability (*this service is only available in Livorno)
 - o Listening to the needs of caregivers by all professionals and the ability to coordinate and mobilize services to ensure appropriate responses to needs - ability to direct to competent professionals or services.
- Clarity and adequacy of information
 - o Clarity of diagnosis (regarding the consequences of the disease from a physical, emotional, and psychological point of view)
 - o Clarity of program and actions
 - o Clarity of prognosis (knowledge regarding the proximity of death)
 - o Investigating the emotions experienced when receiving this information and their perception regarding how it was communicated
- Communication and involvement
 - o Adequacy and consistency of communication among the various professionals involved in the process (convergent or divergent information)

- Involvement of the family in decisions (definition of the PAI)
- Barriers to communication in receiving information or communicating with medical, nursing, etc., staff (complex medical terminology or lack of dedicated communication time)

Mini Delphi.

47 participants were involved in the Delphi study, with an overall response rate of 75%. There were 28 open comments left by respondents within the questionnaire. Table 1 shows the number of respondents.

	Invited people	Respondent people	Response rate
Caregiver (CG)	27	18	83.36
Provider (PR)	22	19	66.66
Tot	47	37	78%

The number of participants is sufficient for the data analysis, both considering all the respondents together and the two sub-groups of participants.

Respondents have an average age of 55 years and are predominantly female in both the groups (83%). Educational attainment was only queried from participants who declared themselves as caregivers. In total, 13 caregivers responded to this question, with a medium-low level of education (76%).

The results of the Delphi study show an overall high rating across all dimensions considered. In particular, dimensions related to needs, responses, clarity of information, and availability in case of need received very high scores, with averages exceeding 9 on a scale from 1 to 10. The results do not present statistically significant differences between the responses of caregivers (CG) and professionals (PR). Below is the summary table of the question "How important do you consider it in evaluating the end-of-life path to explore the following dimensions of the caregiver's experience?" with details for respondent groups.

Perceived importance of the dimension...		N.	Mean	SD	Min	Max	T-test
Needs	CG	18	9,33	1,03	7	10	0.7058
	PR	19	9,05	1,13	7	10	
	Tot	37	9,19	1,08	7	10	
Responses	CG	18	9,39	1,09	6	10	0.3757
	PR	19	8,79	1,36	6	10	
	Tot	37	9,08	1,26	6	10	
Clarity and adequacy of information	CG	18	9,44	1,34	5	10	0.0519
	PR	19	9,37	0,83	8	10	
	Tot	37	9,41	1,09	5	10	
Availability in case of need	CG	18	9,56	0,78	8	10	0.0636
	PR	19	9,11	1,24	6	10	
	Tot	37	9,32	1,06	6	10	
Responses in the Home Context	CG	18	9,17	0,78	8	10	0.3572
	PR	19	8,53	1,24	6	10	
	Tot	37	8,84	1,54	5	10	
Communication and involvement	CG	18	9,67	0,69	8	10	0.6107
	PR	19	9,58	0,61	8	10	
	Tot	37	9,62	0,64	8	10	

Regarding the analysis of the sub-dimensions of needs, it emerges that emotional needs were rated as particularly important by caregivers, with an overall average exceeding 9. Only the sub-dimension "information/training" received a statistically significant higher average score from the caregiver group compared to professionals (CG: mean 9.67, SD 0,69; PR: mean 9.11, SD 1,2; $p=0.0261$). Regarding the sub-dimensions of responses, an overall high rating is observed for all the dimensions considered, for both groups, with an average exceeding 9 out of 10. The analysis of sub-dimensions related to the home setting shows that the quality of care received at home was rated as particularly important, with an average score exceeding 9.5. However, evaluations concerning the frequency and timing of visits received slightly lower scores, although still high. No statistically significant differences were observed between the responses of caregivers and professionals regarding these sub-dimensions.

The sub-dimensions related to responsiveness in times of need received high ratings from both groups, with an overall average exceeding 9. In particular, 24-hour availability was rated as more important by providers than caregivers, with statistical significance (CG: mean 9.22, SD 2.13; PR: mean 9.26, SD 0.99; $p=0.0023$).

The sub-dimensions related to clarity and adequacy of information received high ratings from both groups. In particular, clarity of the program and actions was rated as particularly important. However, no statistically significant differences were observed between the responses of caregivers and professionals on these sub-dimensions.

The sub-dimensions of communication and involvement also received high ratings from both groups. In particular, the adequacy and congruence of communication were rated as particularly important. However, statistically significant

differences emerged between the responses of caregivers and professionals on this sub-dimension, with professionals attributing greater importance to the adequacy and congruence of communication (CG: mean 8.67, SD 1.75; PR: mean 9.63, SD 0.96; $p=0.0146$) and the caregivers' involvement (CG: mean 8.44, SD 1.92; PR: mean 9.26, SD 0.81; $p=0.0006$), compared to caregivers

The results of the ranking (1st place) of dimensions according to the order of priority indicate the preferences expressed by participants regarding the importance attributed to each dimension in the context of palliative care. Regarding the dimension of needs, both caregivers (CG) and professionals (PR) positioned this dimension as one of the main priorities, with a total of 24.32% of responses. The dimension of responses, on the other hand, was rated as less prioritized compared to all others, by both groups. However, the relatively low number of responses may indicate that it may not be considered one of the main areas for intervention.

For the dimension of Clarity and Adequacy of information, although caregivers positioned this dimension lower compared to professionals, it still remains a significant priority with 18.92% of the total responses.

The dimension of Communication and Engagement received the second highest number of overall votes, with 21.62% of the total responses. However, it is important to note that caregivers assigned a higher score than professionals on this dimension.

All comments left in the open-ended questions were read in detail, aiming to capture their meaning and lived experience, associating significant aspects that influence them. There were 28 comments left by respondents, 17 from caregivers and 11 from professionals. From an initial reading of the comments, three broad categories were identified to classify both professionals' and caregivers' comments. These categories relate to personal, professional, and organizational aspects.

About the personal aspects, caregivers highlighted the emotional and social impact of their role, emphasizing the complexity of managing the emotional and physical aspects associated with their loved ones' illness. The importance of psychological support in addressing these difficulties emerged.

With regard to the professional aspects, the main criticisms concern communication, with language barriers and inadequate information about the state of the illness. There was highlighted a contrast of information between palliative care specialists and other professionals, along with a lack of coordination among them.

Regarding the organizational aspects, professionals emphasized the need to increase the services offered, particularly the presence of professionals such as psychologists in palliative care. There was also a need highlighted to enhance support for caregivers and improve teamwork among the various professionals involved.

The results of the Delphi study were presented and discussed with professionals, who expressed their interest in the results with some aspects of novelty with respect to their daily-life experience on the field.

Discussion. The caregiver plays an essential role in palliative care pathways, representing a central point in providing support and assistance to patients in the terminal phase of their life. Behind the role of caregiver, there is a person whose wellbeing affects the outcomes for patients, the function of the services themselves, and the life of the same caregivers also in terms of productivity, ability to participate in the service delivery, co-produce value and contribute to the sustainability of the services. The preliminary results of this study clearly indicate that evaluating end-of-life journeys through the caregiver's experience requires a multidimensional approach that considers various aspects at different stages of the journey. The importance of addressing needs and the necessity of psychological support have emerged as fundamental in dealing with caregiving-related challenges. Additionally, the quality of care received at home has been assessed as particularly important, highlighting caregivers' desire to keep the patient in their familiar environment for as long as possible. Caregivers have highlighted the lack of clarity and consistency in the information received, as well as the lack of coordination among the various professionals involved in palliative care, emphasizing the need for improvement in communication among all stakeholders. Interestingly, the results have shown discrepancies between the evaluations of caregivers and professionals, especially regarding the importance attributed to communication and engagement. While professionals prioritize communication as a key dimension based on questionnaire responses, caregivers express concerns about the lack of communication or coordination among professionals, as highlighted in the analysis of open-ended responses.

Research limitations. The data presented in this article are from a small group of purposively enrolled professionals and caregivers. The results may not be generalizable. Therefore, they should be considered as a stimulus to further research and expand the available evidence, particularly regarding the role that palliative care services could play in promoting evidence-based support policies for caregivers.

In future research steps, it will be crucial to directly involve family caregivers in a final workshop and discuss the evidence that has emerged with them.

Managerial implications. In this study, we believe that the key to evaluation lies in understanding the dimensions relevant to the caregiver to develop tools capable of assessing the overall quality of services in their perspective. Given the crucial role of caregivers in palliative care pathways, it is necessary to understand their experience in order to improve the quality of care and responses provided not only for the patient but also for family caregivers. This is even more necessary in light of the transformative pressures stemming from the National Recovery and Resilience Plan (PNRR) and DM77. One useful tool for defining, measuring, and evaluating interventions could be a caregiver voice detection

system. There are some specific and non-continuous experiences of collecting Caregiver-Reported Measures (Desai et al., 2018), tools capable of monitoring and detecting further evidence for the improvement of care and support initiatives for caregivers. Such surveys could also be useful for reconstructing the actual healthcare and social network that supports both the patient and the caregiver, in order to identify best practices for integration.

In addition, the preliminary results of this study have clear managerial implications since they highlight important differences in the perception of providers and caregivers, which related also to the organization of end-of-life services: they regard the caregivers' preferences for domiciliary services and the less importance attributed to the 24 hours services with respect to coordinated and high-quality services in structured moments.

Originality of the paper. This is one of the first studies exploring the caregivers' experience with end-of-life services, by directly involving both caregivers themselves and professionals in a collaborative process of research. It provides insights for future study on the topic and initial suggestions on potential changes in the organizational models for addressing the caregivers' preferences and needs, and to increase their wellbeing in this critical phase of life.

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Balancing Act: The Impact of Product-Oriented Sustainability Information on Consumer Responses

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Abstract

Despite the emphasis on sustainability in corporate communications, fashion brands often fall short in integrating it into product-oriented messaging, especially in e-commerce platforms. This study draws upon signaling theory and information processing theory to investigate the impact of product-oriented sustainability information on consumer responses when purchasing online. We hypothesize that the presence of product-oriented sustainability information produces positive effects on consumer response. However, an increase in the amount of sustainability information may elicit negative consumer responses, thereby challenging the efficacy of sustainability signals. This phenomenon is attributed to information overload, wherein excessive information surpasses individuals' cognitive processing capacity, resulting in diminished information processing and potentially adverse outcomes. The study is based on a mixed method design. Through an exploratory content analysis, we examine actual product-oriented sustainability information across luxury and fast fashion brands' e-commerce platforms. Preliminary findings reveal variations in the presentation of sustainable product attributes, with certain brands allocating a substantial portion of product information to sustainability. Building upon content analysis' findings, ongoing research plans to conduct experiments to evaluate the effect of product-oriented sustainability information on consumer responses assessing also the mediating role of information overload. We anticipate that an excessive amount of sustainability information provided by fashion brands may lead to unfavorable consumer reactions due to higher information overload. Consequently, our study emphasizes the importance of carefully balancing sustainability information to prevent information overload and foster positive consumer responses. This research contributes to the understanding of sustainability communications in the fashion industry and consumer behavior research. Furthermore, it highlights the evolving landscape of sustainable fashion communications and its implications for industry stakeholders.

Key words: Product-oriented sustainability information; information overload; signaling theory; e-commerce; sustainable fashion communication.

Framing of the research. The fashion industry has faced scrutiny for its employment practices and labor standards across its extensive supply chains, along with the detrimental environmental effects stemming from the production, usage, and disposal of raw materials and finished goods (Crane and Glozer, 2016; Moretto et al., 2018). For instance, fashion manufacturing contributes to 10% of global carbon emissions, equivalent to the European Union's output, depletes water sources, contaminates rivers and streams, and results in 85% of textiles ending up in landfills annually. Even the act of laundering clothes releases 500,000 tons of microfibers into the ocean yearly, akin to 50 billion plastic bottles (Business Insider, 2019).

In response to these criticisms, the fashion industry is increasingly embracing eco-friendly practices, with companies continuously enhancing their sustainability approaches (Wang et al., 2019) and emphasizing their environmental or social credentials. The realm of sustainable fashion encompasses diverse practices, including environmental and social considerations, slow fashion, reuse, recycling, cruelty-free, and anti-consumption measures.

Luxury and fast fashion brands alike have been integrating sustainable measures into their operations. For instance, Stella McCartney, a leading sustainable luxury fashion brand, utilizes eco-friendly materials such as vegan leather, recycled synthetics, organic cotton, and faux fur (Vogue, 2021). Gucci has instituted the Gucci Equilibrium program, focusing on reporting corporate social responsibility (CSR) policies, environmental impacts, employee satisfaction, and structural innovations. Similarly, Primark recently launched Primark Cares, aimed at reshaping clothing production and sourcing practices to minimize fashion waste and enhance the well-being of those involved in Primark's product supply chain. Furthermore, consumers are increasingly mindful of the ethical implications of their purchases, adapting their buying behaviors to favor environmentally and socially responsible brands (Amatulli et al., 2021; Grazzini et al., 2021).

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Sustainability initiatives are frequently well-described in specific sections of corporate websites or in sustainability and CSR reports. However, when it comes to the point of purchase, products often fail to provide sustainability information and details about the production process. Some brands limit themselves to displaying only the material composition of items, while others devote ample space to describing the production process and the product's impact on the environment or society. Due to these differences in product-oriented sustainability information practices among brands, we aim to investigate the impact of this information on consumer responses.

Purpose of the paper. Previous studies have extensively explored the engagement of fashion companies in corporate social responsibility (CSR) activities (e.g., Acuti et al., 2022), examining the primary communication channels they utilize to disseminate information about environmental and social initiatives (e.g., CSR reports, corporate websites). Many prominent global fashion brands have emphasized sustainability as a fundamental aspect of their mission through official communication channels. However, there appears to be a reluctance to integrate sustainability themes into product-oriented communication. For instance, while Gucci promotes a comprehensive, eco-friendly program aimed at reducing its environmental footprint, sustainability features are only highlighted in a limited number of product categories on the company's website.

This study explores the mechanisms and reasons behind the potential negative impact of the quantity of sustainable product information on consumer responses. Drawing upon signaling theory (Connelly et al., 2011; Spence, 1978), we aim to elucidate a possible pathway for understanding the relationship between the amount of sustainable product information and consumer perceptions.

Signaling theory. Signaling theory is a concept often used in economics and communication studies to explain how individuals or entities convey information to others (Spence, 1973). It suggests that in situations where one party possesses more information than the other, signaling becomes crucial for effective communication and decision-making. Two key parties are involved in the signaling process: the sender (e.g., the company) and the receiver (e.g., the consumer). The sender is the party with information to convey, and he must make decisions regarding whether and how to communicate the information they possess. This decision involves considerations such as what information to convey, how to convey it, and the potential consequences of signaling. On the other hand, the receiver is the party that receives the signal and he must interpret the signal provided by the sender. This involves assessing the credibility, reliability, and relevance of the signal to make informed decisions. Thus, signaling theory is concerned not only with the transmission of information but also with how that information is interpreted by the receiver (Connelly et al., 2011). In this study, signaling theory is employed to elucidate the relationship between the quantity of product-oriented sustainability information and consumer perceptions. In an online environment characterized by high information asymmetry, brands play a pivotal role in shaping consumer opinions and decisions through the signals they convey (Javornik et al., 2020). Signaling theory posits that brands utilize signals to convey latent quality attributes to consumers, thereby reducing information asymmetry (Connelly et al., 2011).

The presence of product-oriented sustainability information. Product oriented sustainability information refers to the communication of product attributes, such as the use of recycled materials (Grazzini et al., 2021). Communication of sustainable product attributes has been shown to enhance consumer satisfaction and purchase behaviors (e.g., Hernandez et al., 2015). Prior research across various industries, including fashion, has demonstrated the positive influence of sustainable product attributes on consumer behaviors (Joshi & Rahman, 2015; Kumar et al., 2017; Cervellon & Wernerfelt, 2012; Steinhart et al., 2013; Niinimäki, 2010). Moreover, signaling theory supports that the presence of product attributes reduces the information asymmetry between the consumer and the company leading to positive consumers' outcomes.

Thus, based on previous results and according to signaling theory, we expect that conveying product-oriented sustainability information leads to positive consumer responses.

The amount of product-oriented sustainability information. Literature presents conflicting findings regarding the impact of sustainability on luxury and fast fashion products, suggesting that sustainable product attributes alone may not ensure the success of fashion items (Bly et al., 2015; De Angelis et al., 2017; Fani et al., 2022; Janssen et al., 2017).

While existing research provides valuable insights into the communication of sustainable product attributes, there remains a gap in empirical research concerning the effect of the quantity of sustainable product information on consumer responses in the fashion industry (Amatulli et al., 2021). Information processing theory (Tybout et al., 1981) may help in the understanding of the effect of the quantity of information conveyed on consumer responses. The information processing theory explains consumer behavior by focusing on individual's cognitive processes. It suggests that behavior is influenced not only by what individuals think, but also by how they process information. Incoming information is usually stored in active memory and can trigger the retrieval of relevant thoughts associated with previously processed objects. However, since active memory has limited capacity, information needs to be transferred to long-term storage for future use. This consolidation process, known as rehearsal, involves actively linking attributes with objects. In this context, we assume that if the quantity of product-oriented sustainability information is too high, the active memory is not able to transfer the information to the long-term memory. The failure of this systematic pattern limits the benefits highlighted by previous literature coming from the association of sustainability attributes with products (e.g., Grazzini et al., 2021).

For these reasons, we expect a negative relationship between the amount of product-oriented sustainability information (high vs low) and consumer responses.

Information overload. The information processing model predicts that as information load increases, individuals may initially allocate more cognitive resources to process information, but eventually, their processing capacity may become overwhelmed, leading to decreased information processing and decision-making efficiency (Schroder, Driver, &

Streufert, 1967). In line with this, past research suggests that individuals have limited cognitive capacity and may experience cognitive overload when exposed to excessive information (Baddeley, 2000; Miller, 1956; Fox et al., 2007). This phenomenon of information overload can result in consumers becoming frustrated, confused, and less able to assimilate and elaborate on the information provided (Mitchell & Papavassiliou, 1999; Jacoby et al., 1984; Wilson, 1996; Turetken & Sharda, 2004; Maity et al., 2002).

In our context, we assume that information overload can further elucidate the negative relationship between the amount of product-oriented sustainability information and consumer responses, working as a mediator of this relationship.

Methodology. This study adopts a mixed-method design (Davis et al., 2011) to uncover the effect of the amount of product-oriented sustainability information on consumer responses. It considers two main phases: the exploratory phase and the Experimental phase.

Exploratory Phase: The initial phase of this research project involves conducting an exploratory content analysis of product-oriented sustainability information accessible on various brands' e-commerce platforms. This phase aims to gain a comprehensive understanding of the research subject/context (Bellucci et al., 2019) and to gather valuable insights for subsequent experiments. For this phase we consider all 250 brands included in the Fashion Transparency Index (FTI; Fashion Revolution, 2023). To ensure comparability of information obtained from brands' e-commerce platforms, we selected a prototype product (i.e., a white t-shirt). Data collection was conducted on the English version of the websites, and product information for the selected item from each brand was collected and stored in an Excel spreadsheet. The pdf of the website was downloaded and stored in Nvivo.

Content analysis involves systematically condensing extensive text into fewer content categories using explicit coding rules (Stemler, 2001). In accordance with Bell et al. (2018), the research team discussed and approved a coding schedule, which serves as a framework for coding all data related to an item. Additionally, the coding manual, a set of instructions for coders outlining categories and rules for text classification, was developed, discussed, and approved. To ensure consistent coding of the content, the coding manual includes a comprehensive list of dimensions, various categories under each dimension, corresponding codes for each category, and guidance on factors to consider when allocating a code to a specific dimension. The coding schedule embeds: i) the brand; ii) the industry (fast fashion vs Luxury); iii) the position of the brand in the FTI (low-medium vs medium-high); iv) the link to the webpage analysed; v) the product information available on the website; vi) the presence of sustainability signals (yes vs no) vii) the number of words embeds in the product information available on the website viii) the number of words related to sustainability ix) the dimension of sustainability (environmental vs social sustainability); x) the type of sustainability content.

Two researchers independently conducted the coding process to safeguard its internal validity, as suggested by Weber (1990). Subsequently, the results were compared to assess inter-rater reliability, following Cohen's approach (1960), and measured using Cohen's kappa coefficient, yielding a value of 0.80. To resolve any discrepancies, the researchers collaboratively discussed specific cases. In instances of persistent disagreement, a third researcher was consulted. After completing the coding process, comments were descriptively analysed, tallying categories derived from the coding process.

Experimental Phase (Ongoing): Building upon the insights gained from the exploratory study, a series of scenario-based experiments will be developed to test our assumptions.

In the first experiment, we will examine the direct effect of product-oriented sustainability information on consumer responses. A scenario-based experiment will manipulate the presence (versus absence) of sustainability attributes in the product description. Consumer responses will include attitude towards the product (Chae and Hoegg, 2013) and willingness to purchase the product (Dodds et al., 1991). These variables will be measured using previously validated scales, which respondents will rate on a scale from 1 to 7. A minimum of 100 participants will be recruited from the UK panel of Prolific Academic (Peer et al., 2017).

In the second experiment, we will investigate the effect of varying amounts of product-oriented sustainability information (high versus medium versus low) on consumer responses. The amount of information presented in this experiment will be determined through a pilot test to ensure that manipulations are perceived as intended. Consumer responses will be measured as in the first experiment. Similarly, participants will be recruited from the English panel of Prolific Academic, with a minimum sample size of 150 individuals.

In the third experiment, we will explore the mediating effect of information overload. An online experiment, based on the same manipulations as the second experiment, will be conducted. A minimum of 250 individuals will be recruited from the UK panel of Prolific Academic. The same measures as in the first two experiments will be used, with information overload being assessed using a seven-point Likert scale based on Hunter et al. (2022).

Results. **Exploratory phase.** The purpose of this exploratory analysis was to examine how different typologies of brands communicate sustainability related to the product. As the content analysis is still in progress, preliminary results refer to a sample of selected sixteen brands positioned across different tiers of the FTI. Specifically, we chose four luxury brands positioned in the low-medium segment of the index (Max Mara, Brunello Cucinelli, Hermès, and Chloé), and four luxury brands positioned in the medium-high segment (Gucci, Fendi, Balenciaga, and Saint Laurent). Similarly, we selected eight fast fashion brands from the low-medium segment (Primark, Zara, Shein, Abercrombie & Fitch) and the medium-high segment (OVS, H&M, Tezenis, Uniqlo).

The average number of words used to present and sell a product on its own e-commerce is 131 ($Min_{words}=39$, $Max_{words}=327$). Luxury brands usually use an average of 119 words ($Min_{words}=39$, $Max_{words}=188$), while fast fashion brands show an average of 143 words ($Min_{words}=48$, $Max_{words}=327$). The number of words referring to sustainability ranges from 3 to 162 words ($M_{s_words} = 55$). In terms of words related to sustainability the difference between fast fashion and luxury brands is not significant ($M_{s_words_fastfashion} = 56$; $M_{s_words_luxury} = 53$). The highest rate of the words related to sustainability over the total number of words refer to Balenciaga (88%), who describes in depth the impact of the product on the environment and Balenciaga's sustainability projects. OVS and H&M, both positioned at the medium-high level of the sustainability index spend around 70% of the product information on sustainability issues. When talking about sustainability related to the product, brands usually refer to environmental sustainability. Some brands (five out sixteen brands) refer also to social sustainability mentioning work conditions, and product and suppliers' place of origin. In terms of type of content related to sustainability brands mention not only the impact of the product on the environment (i.e., product sustainability), but also general sustainability initiatives (i.e., general sustainability), sustainability throughout the supply chain in terms of place of origin and suppliers' localization and standards (i.e., transparency), and information regarding how consumers can take care of the environment by taking care of the product (consumer sustainability). Luxury brands mainly focus on transparency, while fast fashion brands focus on product sustainability and general sustainability initiatives.

Experimental designs (expected). From our experiments, we expect that the presence (vs. absence) of sustainable product-oriented information positively affects consumers' reactions. This result will be in line with previous studies that assume that the presence of sustainability information plays critical roles in shaping consumer decisions toward sustainable practices (De Pelsmacker & Janssens, 2007).

However, excessive information availability can lead to information overload, where consumers struggle to process the vast amount of information and may become overwhelmed (Bartiaux, 2008; Connolly & Prothero, 2008; Carrigan & Attalla, 2001; Longo et al., 2019). Thus, we expect that a high amount of product-oriented sustainability information negatively affects consumers' perceptions and behaviors towards fashion products, due to information overload.

Research limitations. The current ongoing study is not free from limitations. The first limitation refers to the use of scenario-based experiments. Further study should increase the external validity of these results with a field study. Moreover, other variables (e.g., consumer green identity) should be included in the model with the aim to ensure the robustness of the model.

Managerial implications. Managerially, the study helps fashion brands understand how they should communicate sustainability in the context of product information, by showing the potential impact on consumers' perceptions. This study also suggests the need for fashion brands to carefully balance the amount of sustainability information to avoid information overload to ensure positive consumer responses.

Originality of the paper. This study advances past research on sustainable communication in the fashion context, by investigating the role of the amount of product information on consumer responses, which remains overlooked in the literature (e.g., Amatulli et al., 2021). Moreover, the study suggests information overload as a potential underlying mechanism that explains the relationship between the amount of product-oriented sustainability information and potentially negative consumers' responses. This study thus aims to explore whether, how, and why the amount of product-oriented sustainability information might negatively influence consumer perceptions and behaviors.

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Catalysing Sustainability: Retailers as Driving Platforms in the Food Industry's Transition¹

ALBERTO MASSACCI * ELENA CASPRINI ♦ LORENZO ZANNI **

Abstract

As societal and environmental challenges persist, industries face increasing pressure to transition towards more sustainable practices. In this context, the food industry is under scrutiny due to its pivotal role in addressing issues such as nutrition, food security, and the environmental, social, and economic impact of its productions. While technological advancements have shown promise in improving sustainability within agricultural production, economic viability remains a critical concern. The paper starts from conceptualizing the retailer as a mediating platform, physical or digital, of communication between supply and demand. By reviewing existing literature on the role of platforms in fostering sustainability, this work explores the potential of the retail industry in driving sustainability within the agri-food sector. Through a two-stage review process, we first examine the evolving landscape of platform literature as a driver for sustainability. Then, focusing on the agri-food retail industry, we attempt to identify potential gaps and opportunities. Our findings highlight opportunities for future research and underscore the importance of innovation and value generation in driving sustainable change. The paper offers valuable insights for academics and practitioners seeking to navigate the intersection of sustainability, platforms, and retail in the agri-food industry.

Key words: Food retail; Sustainability transition; platforms; business model

Framing of the research. *While social and environmental issues related to production continue to damage our society, public attention and political commitment are leading all industrial sectors to initiate, or accelerate, the transition process towards more sustainable productions. The food industry is one of the most scrutinized sectors for several factors. On one hand, nutrition and food security continues to represent a worldwide plague, highlighting critical issues in today's production models. On the other hand, scholars point out how quest for food security (especially through intensification) may undermine transition towards sustainable agriculture and food production systems (El Bilali, 2019). The digital revolution and information technology systems have been shown to provide a great impact on agricultural production processes by improving their efficiency and the green growth in the sector (Shen et al., 2022). However, although technologies are significantly improving the environmental impact within production, it remains crucial to ensure the economic sustainability of the industry. In order to ensure a full commitment, on the production side, to the transition towards sustainable development, sustainability principles need to be integrated into the core of business design, operation, and strategy (Stubbs et al. 2008). Indeed, a business model for sustainability aims to generate social and environmental value, while preserving or improving the more traditional economic goal (Bohnsack et al., 2014). However, a wide stream of literature has emphasized how the evolution of a business model towards sustainable goals could be affected by several types of barriers, such as few financial incentives, low market acceptance or scarce legislative and political pressure (Laukkanen et al., 2014; Asswad et al., 2016).*

Hence, firms must be able to transfer the value generated by their business model for sustainability to an audience that can value and appreciate it. The growing demand for socially and environmentally responsible behavior has heightened consumers' willingness to align with social norms. Yet, over the past two decades, a market-oriented literature on consumer behaviour has underscored the disparity between what individuals express and their real actions, leading to the conceptualization of the attitude-behavior gap (Boulstridge et al., 2000). Several studies have attempted to explain such phenomena and provide valuable justification or evidence within different context (Wiederhold et al., 2018; Juvan

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et al., 2014). Sultan et al. (2020) emphasize that communication, satisfaction, and trust exert a positive and significant influence on purchase behavior while simultaneously reducing the attitude-behavioral gap. Despite technology shrinking the concept of space in the market by facilitating global market interaction, it has concurrently bolstered the role of platforms in facilitating market mediation. Consequently, factors like communication, satisfaction, and trust are frequently intermediated by third parties, potentially impacting the interaction between businesses and end consumers. The concept of platform has gained prominence with the advent of Internet and globally recognized companies such as Airbnb, Amazon, and Alibaba to the point where the current economic landscape has been described as a “platform economy” by the popular business press (Rietveld et al., 2021). While in many sectors digital platforms are, nowadays, the major business model, other industries have remained tied to a less digitalized concept of platform. Indeed, its entrepreneurial meaning has been present for centuries and involves the active role in meeting and mediating supply and demand. Although the food industry has still been influenced by the arrival of new technologies, and the emergence of new entrepreneurship in this regard, it has maintained the traditional physical store as the main space for the meeting between supply and final demand.

Purpose of the paper. In such a framework, starting from the conceptualization of the retailer as a platform for exchange and interaction between demand and supply, this paper attempts to study the strategies that this organizational structure can exploit to push sustainability in the agri-food sector.

The paper will first review the main literature on the role of platform in driving the transition towards a more sustainable system (in its triple essence: environmental, social and economic). After providing a broad overview of the topic that allows us to get the overall picture about the state of the art of the literature about the main conceptual frameworks, special attention will be given to the applications in the retail food sector, aiming to comprehend its potential impact as an intermediary, particularly concerning cross-side network effects and the influence that the role of the retailer can have both on the consumer side and towards the entire supply chain. This will allow to identify specific industry characteristics and potential business opportunities for a sector that needs to converge the three dimensions of sustainability at an ever-increasing pace.

Methodology. In order to satisfy our research needs, we have used a two-stages literature review. The first stage involves the identification of the relevant literature aimed at identifying the contribution that platforms can provide to the sustainability transition. In the second phase, we will dig-in into the same literature to understand whether the food industry is proceeding in the same direction or if there are peculiarities compared to other sectors and potential opportunities that still have to be exploited.

The analysis will involve the study of academic communities through the identification of the common literature on which each article is founded [i.e. The higher the reference overlap between the two papers, the more these two papers were deemed to belong to the same community” (Casprini et al., 2020, p. 4)]. Further, the analysis will involve the identification of the main thematic clusters that emerge in this literature through the analysis of the keywords of each contribution; hence, the linkages is constructed based on the co-occurrence of the author’s keywords in the same paper. The higher the number of times in which the linkage occurs, the higher is the connection between the two themes. The research query keywords were excluded from the keywords analysis.

The analysis was conducted using VOSviewer 1.6.8 software (Van Eck e Waltman, 2010) as it allows to easily summarize and visualize our research needs and results.

We conducted the literature search on the SCOPUS database that allows to identify the relevant material based on the presence of keywords in the title, abstract or authors’ keywords.

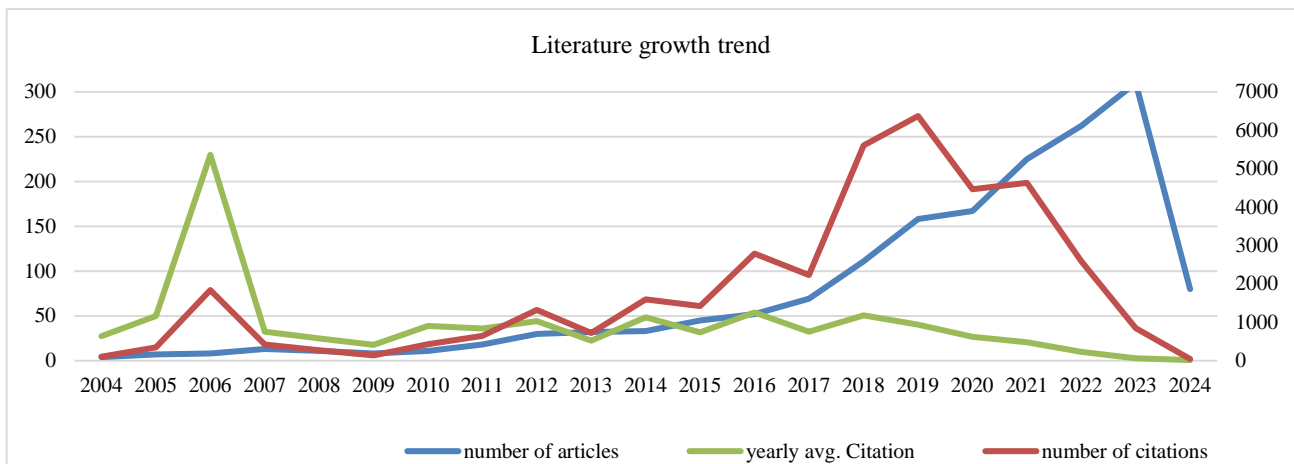
The string implemented to satisfy our research needs is: “TITLE-ABS-KEY (sustainab* AND (platform* OR "two-sided market*" OR "multi-sided market")) AND PUBYEAR > 2003 AND PUBYEAR < 2025 AND (LIMIT-TO (SUBJAREA, "BUSI")) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (LANGUAGE, "English"))”. This should allow us to obtain all the main literature that has been written in the field of Management about concepts related to sustainability and platforms. In the second phase, we repeated the search by introducing an additional filter to narrow down the scope of analysis to the agri-food sector (The filter added to the main string is: “AND (agri* OR *food*)”).

The analysis was limited to the literature of the last 20 years, written in English in the form of journal’s article². The need to provide the most up-to-date view (including articles published in 2024) is due to the need to offer adequate support to the objectives of the agritech project within the National Recovery and Resilience Plan (PNRR), of which this research is part of.

Results. The main search (not just limited to the agri-food) on the SCOPUS has resulted in an overall number of publications equal to 1654. The descriptive analysis of the scientific literature has shown an increasing trend in both the number of publications and citations. Something to notice is the comparison between the trend of the number of publications, citations and their yearly average; despite, both citations and publications are increasing over time, the rising trend in the yearly average number of citations highlights a rapid decline of the scientific contribution after a few years (otherwise, older publications should have more citations due to the greater number of scientific contributions that followed them). On the other hand, the 4-year lag time between the peak in publications and citations which reflects the average publication period required for full dissemination may represent an issue in a field that evolves so rapidly. Indeed, a quick degree of obsolescence and a relatively slow level of dissemination could compromise the adequacy and usefulness of scientific contributions to the market and empirical applications, which, both in the digital and sustainability realms, are evolving at an exponential rate.

² Further, only documents with the availability of the DOI were kept in the analysis.

Fig. 1: Literature growth trend (all articles and citations)



The analysis on journal productivity shows that the *Journal of Cleaner Production* has a significantly higher number of scientific publications compared to all other journals. However, when we examine the average citations and the impact measure of each journal (measured as the weighted average citations per year), Tables 2 and 3 (in the appendix) demonstrate that the journal does not fall into either classification; the tables show that the most productive journals in terms of overall citations and yearly weighted citations are, respectively, the *MIS Quarterly: Management Information Systems and Group Decision and Negotiations*. However, while the former journal has 9 contributions in this journal, the latter only has one article³ with 197 citations included in the database. The only journals that count more than 5 articles within the top ten performer in the weighted citations list are the “*Journal of Business Research*” and “*Current Issues in Tourism*”.

Tab. 1: Most relevant Journals (in terms of number of articles) – Wide picture

Journal	Num. of articles	Tot. citations	Avg. citations	weighted impact ⁴
<i>Journal of Cleaner Production</i>	260	10015	38,5	1,35
<i>Technological Forecasting and Social Change</i>	34	2144	63,1	2,50
<i>Journal of Sustainable Tourism</i>	31	1331	42,9	2,18
<i>Emerald Emerging Markets Case Studies</i>	28	36	1,3	0,06
<i>International Journal of Production Economics</i>	23	1314	57,1	2,14
<i>Cities</i>	21	826	39,3	1,73
<i>Business Strategy and the Environment</i>	20	189	9,5	1,15
<i>International Journal of Production Research</i>	15	1284	85,6	2,21
<i>International Journal of Logistics Research and Applications</i>	15	339	22,6	2,82
<i>IEEE Transactions on Engineering Management</i>	15	125	8,3	1,22
<i>Journal of Retailing and Consumer Services</i>	13	329	25,3	1,61
<i>Journal of Business Research</i>	12	958	79,8	3,50
<i>Research in Transportation Business and Management</i>	11	143	13,0	0,67
<i>Transportation Research Part A: Policy and Practice</i>	10	178	17,8	1,62
<i>Technology in Society</i>	10	103	10,3	0,91

When we move to the thematic analysis constructed through the clustering methodologies identified in the previous sections, we see that the literature appears to be strongly interconnected.

Figure 1 provide a graphical overview of the main thematic clusters that emerged in the review. The reason why the keywords that would have emerged directly from the string that was used in SCOPUS were removed from the graphical analysis is to avoid trivial results; indeed, while it would be obvious to have platform and sustainability as the main outcome variable, the inclusion would have also altered the network interconnection due to the centrality and strength of their linkages.

The 5 most cited keywords, as highlighted in Table 2, are “Sharing Economy”, “Social Media”, “Innovation”, “Circular

³ Lai, L. S., & Turban, E. (2008). Groups formation and operations in the Web 2.0 environment and social networks. *Group Decision and negotiation*, 17, 387-402.

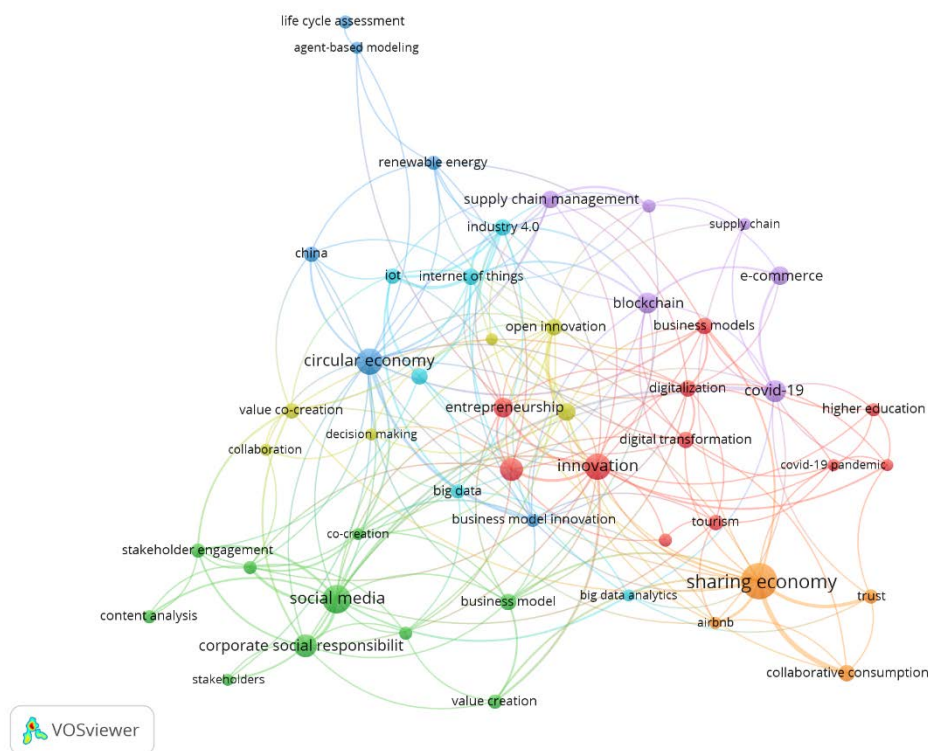
⁴ The weighted impact is constructed by dividing the average citation of the journal in the year by the overall average number of citations in the same year. Then, the final score is constructed as the simple mean of the values for every year.

$$\frac{\sum_{\text{year}} \text{Avg. citations of the journal in the year}}{\text{number of years}} / \text{Overall avg. citation in the year}$$

Economy” and “Crowdfunding”. While Innovation appears to be central in the network, highlighting the main research focus of this literature, the other keywords provide new organizational settings and tools that have gained prominence in the platform economy. The social media cluster is highly interconnected with the theory on stakeholder engagement, showing how this can contribute also to the sustainability field.

Sharing Economy, Circular Economy and Crowdfunding are business models and organizational that can contribute to the three sustainability goals since they contribute to the optimization of resources (financial and non) at different stages of the value chain.

Fig. 2: Keywords co-occurrence



Tab. 2: provides an overview of the most popular keywords

Keywords (all)	Occurrence	Keywords (agri-food)	Occurrence
<i>Sharing Economy</i>	79	<i>Social media</i>	6
<i>Social media</i>	48	<i>Blockchain</i>	5
<i>Innovation</i>	44	<i>Communication</i>	4
<i>Circular Economy</i>	43	<i>Crowdfunding</i>	4
<i>Crowdfunding</i>	34	<i>Iot</i>	4
<i>Corporate Social Responsibility</i>	33	<i>Agent-Based Modelling</i>	3
<i>Covid-19</i>	29	<i>Retailing</i>	3
<i>Blockchain</i>	27	<i>Covid-19</i>	3
<i>Entrepreneurship</i>	23	<i>E-Commerce</i>	3
<i>E-commerce</i>	22	<i>Sharing Economy</i>	3
<i>Supply Chain Management</i>	20	<i>Innovation</i>	3
<i>Crowdsourcing</i>	19	<i>Life Cycle Assessment</i>	3

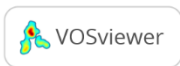
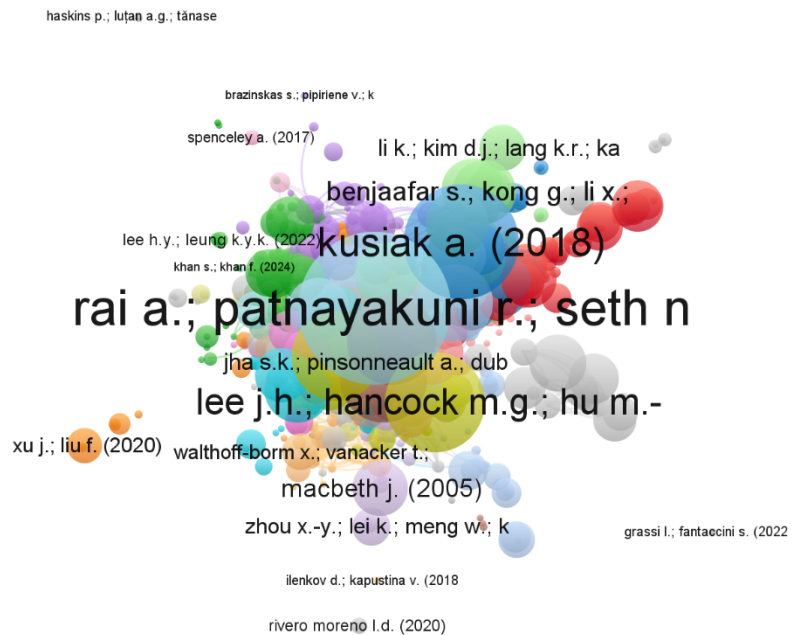
The Bibliographic coupling analysis highlights a highly interconnected literature that, for obvious reasons, is held together by the concepts of sustainability and platform; however, within the identified clusters, it is possible to identify some themes of greater relevance that can summarize the core aspects of each group.

Within the major cluster (made by 83 articles), "Circular Economy" appears to be a crucial and overarching theme. The second largest group (made by 81 articles) mainly deepen the aspects related to “stakeholder engagement” and its role in fostering sustainable development and ensuring that the interests of various stakeholders are considered in decision-making processes. The third thematic cluster appears to be highly heterogeneous; however, two relevant aspects that emerge in the literature are related to the role of digital capabilities and institutional pressure in influencing sustainable development. The fourth group focuses on the development of digital platforms and the use of technologies for platform development. Several contributions provide empirical evidence on the topic of smart cities and the aid that technologies can bring to urban governance.

Focusing on the most relevant contributions that emerge in the remaining clusters, it is possible to provide further main research themes that are worth to mention. In relation to the relationship with the consumer, the marketing literature has leveraged platforms to create novel customer engagement models, focusing on enhancing environmental and social sustainability. This includes the growing adoption of the sharing economy across various sectors. Moreover, platforms can contribute to the economic sustainability of businesses by fostering consumer engagement and loyalty through initiatives like co-creation projects and crowdfunding.

Fig. 3: Bibliographic coupling

em a.; prinsen p.; vuppala



Focus on the agrifood sector

Digging the analysis into the agri-food industry, we find a relatively large literature as it comprehends 165 out of the overall number of publications (i.e. 10%). However, the literature appears to be highly disconnected, especially when we do not consider the string variable (Figure 4 in the Appendix).

If we consider that the overall literature is ten times larger than the one concerning the analysis of the agri-food industry, we can compare the relative relevance of the concept arising from the study.

While the role of “social media” and “Crowdfunding” appears to be relevant in both sectors, highlighting a proportional interest between the academic communities, the “Sharing Economy” appears to be relatively unexplored within the agri-food sector. Hence, despite some efforts has been made (Michelini et al., 2020; Asian et al., 2019; Moncef et al., 2021), there is space for further debate and opportunities in the agri-food sector in relation to this concept. Further, future research could focus on the role of retailers since none of the literature; indeed, even looking outside the database of analysis, only few and very recent contribution have tried to disentangle some aspects connected to this topic (Mai et al., 2022; Barykin et al., 2021).

Finally, focusing into the more specific task of this research, we analyse the academic contributions that, in this framework, have contributed to the retail industry. Saarijärvi et al. (2024) provides a similar conceptualization of the retailer as a driving force for the sustainable change by looking from a different perspective; indeed, differently from us, the authors use the literatures on reverse use of customer data, gamification, and customer experience to provide the wide context of their study. Another stream of literature focus on the consumer side by

looking at how to influence consumers consumption towards more sustainable standards (Xu et al., 2021; Samoggia et al., 2021). A larger stream of literature provides theoretical and empirical evidence on the potential in the optimization of the logistics and the supply chain management (Paciarotti et al., 2022; Cramer et al., 2023)

Finally, there are contributions aimed at investigating the implementation of the main business model grown throw the intensification of the platform economy in the retail industry; while Konhäusner (2021) provides some evidence on the use of crowdsourcing, Jo et al. (2024) and Mullick et al. (2021) provides insights on the economic, social and environmental efficacy of the digitalization of the retail store through the use of platforms.

Despite the cited literature provides several interesting insights, the relevance of the thematic under study requires a

greater effort in terms of innovation and value generation. For this reason, we believe that this research represents a useful step towards the development of future research lines that, as demonstrated, are currently underdeveloped and could lead to the achievement of the motivating objectives.

Research limitations. The paper has several research limitations. From a technical perspective the dataset could be expanded with additional data sources that could increase the size of the relevant literature and the methodology could be deepened with the systematic analysis, at least for the agri-food area. From a theoretical standpoint, while restricting the research to the confines of the platform concept aligns with our goal of exploring potential value-generating solutions within the currently absent realms of the food supply chain, particularly in relation to the retailer's role, this approach may have overlooked certain specificities associated with the food sector that extend beyond the platform concept. For this reason, future research will be focusing on the specific role of the retailer in driving the sustainable change. However, we believe it is prudent to start with the broader concept to identify unexplored opportunities that might otherwise be missed by narrowing the research focus solely to the specific context of interest.

Managerial implications. The paper provides interesting academic and managerial implications. First, of all, starting from the analysis of the literature on the role of platform as drivers for sustainability, it highlights some differences between the agrifood sector and the other industries. Furthermore, by providing a valuable overview of the potential role of platforms in the transition towards a more sustainable society, it may provide useful business opportunities that the agri-food industry, as well as in other sectors that have not been analysed in this context, could explore.

Originality of the paper. The paper is the first attempt to summarize and identify potential gap in the generation of sustainable value in the platform, and retail, industry. Furthermore, the utilization of a broad-spectrum approach to identify opportunities within a specific niche, although already employed in literature, synthesizes the potentialities of the retail sector that had not been explored from the platform perspective.

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Appendix

Tab. 2: 10 most impactful journals (counted as average number of citations)

Journal	Number of articles	Tot. citations	Avg. citations	weighted impact
MIS Quarterly: Management Information Systems	9	1999	222,1	2,33
Group Decision and Negotiation	1	197	197,0	7,91
Journal of Interactive Marketing	1	178	178,0	4,04
Supply Chain Management	3	480	160,0	4,02
Business Ethics Quarterly	1	119	119,0	0,52
International Journal of Information Management	3	340	113,3	4,46
Academy of Management Annals	1	104	104,0	5,06
Annals of Tourism Research	2	202	101,0	2,02
Management Science	5	504	100,8	2,38
Journal of Supply Chain Management	1	99	99,0	1,84

Tab. 3: 10 most impactful journals (counted as weighted average number of citations per year)

Journal	Number of articles	Tot. citations	Avg. citations	weighted impact
Group Decision and Negotiation	1	197	197,0	7,91
Academy of Management Annals	1	104	104,0	5,06
International Journal of Productivity and Performance Management	3	13	4,3	4,75
Journal of Facilities Management	2	26	13,0	4,73
International Journal of Information Management	3	340	113,3	4,46
Journal of Interactive Marketing	1	178	178,0	4,04
Supply Chain Management	3	480	160,0	4,02
Innovation and Green Development	1	10	10,0	3,64
Journal of Business Research	12	958	79,8	3,50
Current Issues in Tourism	5	184	36,8	3,40

Fig. 4: Keywords Co-occurrence **without** the use of the string variable used on SCOPUS for the literature search

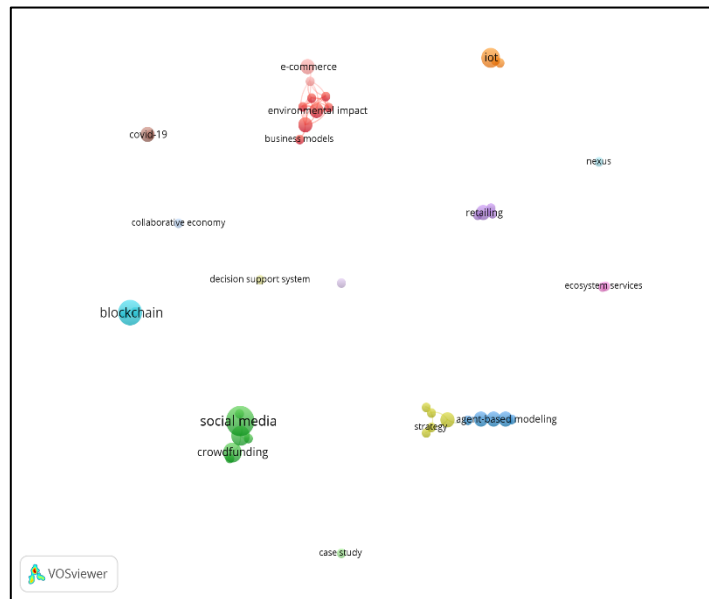
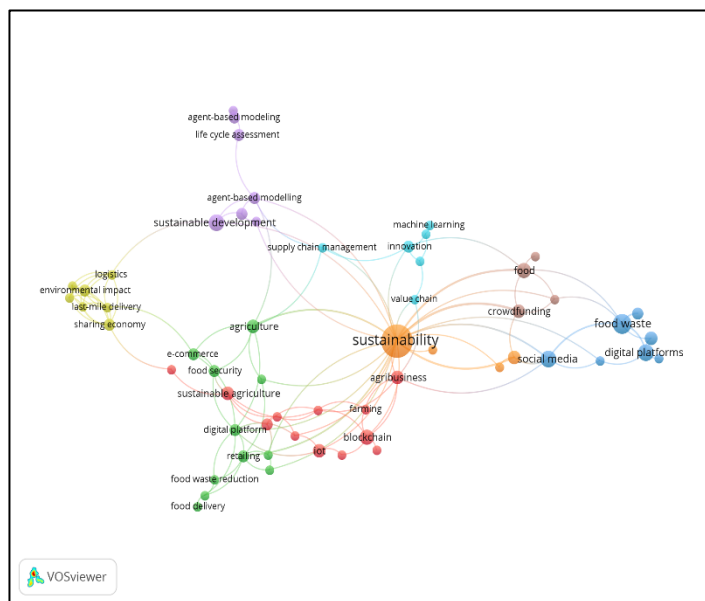


Fig. 5: Keywords Co-occurrence **with** the use of the string variable used on SCOPUS for the literature search



The right kiosk across different generations!

A quantitative study in the retailing food sector

LUCA CORINALDESI¹ GENNARO IASEVOLI² CHIARA OTTOLENGHI³

Abstract

The aim of this paper is to understand, through a quantitative study, the motivations underlying the use of kiosks while purchasing retailing food products. The study may be interesting because kiosks in the retailing food industry can increase brand loyalty and make a phygital experience more enjoyable.

Methodologically, the study was conducted by carrying out quantitative research with 874 valid surveys. The analysis revealed some significant diversities; in particular, customers positively would use kiosks when ordering food products in order to save time, have personalized discounts and have product combinations. The analysis also reveals generational diversities in terms of use's preferences: the younger segment (Generation Z and Y) is interested in using them in order to speed up the purchase process, while the consumers born in Generation X prefer to have suggestions on product combinations and specific promotions when using kiosks.

From a managerial standpoint, our findings suggest that businesses should undertake precise customer segmentation to identify and cater to the diverse needs of consumers who are inclined to use kiosks during their retailing food purchasing journey. This strategy is imperative for companies aiming to leverage kiosk technology to enhance customer satisfaction and loyalty effectively.

The study opens the door for future research to examine the effects of varying kiosk designs on consumer purchase motivation, advocating for a deeper qualitative exploration into the attitudes of those engaged with phygital experiences. This investigation not only contributes to the academic literature by offering novel insights into consumer motivations for using food purchasing kiosks but also provides practical guidance for businesses looking to adapt to and capitalize on the evolving retail landscape.

Key words: *Phygital; Kiosk; Generational study; Quantitative analysis; Customer experience; Self-service technology.*

Framing of the research. *In recent years, numerous studies have highlighted a marked increase in the velocity of various industries, attributing a significant portion of this growth to the emergence of the phygital concept. This concept exemplifies the merging of physical and digital realms, evident in practices such as online ordering with subsequent in-store pickup or home delivery (Wu and Wu, 2015). Research conducted in Italy (IISole24Ore, 2021) reveals that a considerable 74% of consumers have engaged in phygital purchasing activities in recent times.*

Present-day businesses are actively pursuing the creation of integrated customer experiences that bridge the digital and physical domains, thereby enriching the quality of the shopping journey. The phygital phenomenon mirrors the current consumer dilemma-balancing the allure of traditional shopping with the efficiencies of digital channels. This shift represents a significant transformation in socio-economic practices (IISole24Ore, 2021), driven by the digital sphere's capacity to cater to consumer needs with innovative services and practices that have become indispensable. A majority of Italian shoppers are of the opinion that digital innovations could significantly enhance the retail experience, through in-store promotions, product discovery, and navigation assistance, along with the provision of personalized service offerings. The essence of a phygital customer experience transcends mere dissatisfaction resolution, aiming instead to discover and orchestrate moments of profound significance and delight in the consumer journey.

Despite the scarcity of scholarly attention towards the phygital impact on the retailing food industry, a growing body of businesses within this realm are adopting phygital strategies in response to escalating consumer demand. Recent findings indicate that 37% of individuals express interest in experiencing a phygital culinary venture (IISole24Ore, 2024a), leveraging virtual and augmented reality to enrich the dining ambiance with customized lighting, fragrances, and auditory elements, thus enhancing the engagement with culinary heritage. The retailing industry is increasingly gravitating towards phygital engagements to captivate a broader audience. According to further studies (IISole24Ore,

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2024b), an anticipated 70% of restaurateurs in 2024 will expand their use of chatbots and content generation tools for more personalized customer interactions. The cornerstone of contemporary restaurant success lies in technological innovation, encompassing advanced digital menus, social media platforms, booking and payment applications, and notably, kiosks that offer multifaceted assistance to patrons (IISole24Ore, 2024b).

The introduction of interactive kiosks in retailing demonstrates the dual benefits of increased sales and improved customer experiences. These interactive kiosks offer greater control and customization of orders to customers, reduce waiting times, and enable retailers to serve more customers during peak hours, thereby easing the workload on staff and enhancing overall customer satisfaction (Akcarn, 2020). Moreover, the research emphasizes the necessity of balancing efficiency with the enjoyment aspects of shopping, underlining the importance of a phygital strategy that transcends mere transactional interactions to deeply understand and cater to the real reasons' customers utilize kiosks (Kim et al., 2023).

Building on these premises and the fact that consumers are increasingly interested in the phygital world, digital advancements could enhance the in-store shopping experience by spotlighting offers and promotions within the physical store, facilitating product search and navigation, it was decided to delve deeper from a general perspective and then specifically investigate the generational differences in the motivations behind consumers' use of phygital tools like kiosks when purchasing retailing food products. Therefore, the objective of this study is to understand, through a quantitative analysis, the motivations underlying the use of kiosks in the purchase of retailing food products.

Purpose of the paper. Interactive kiosks are key to phygital retailing, which is designed to provide a seamless customer experience by integrating multiple online and offline retail channels (Batat, 2022). They enhance the shopping experience by directly engaging consumers, offering them autonomy, reducing their waiting time, and boosting their satisfaction and sense of empowerment (Del Vecchio et al., 2023). For example, at a kiosk, customers have the ability to place a physical item onto a digital display to access comprehensive details such as the item's features, available stock, color options, and sizes, and to make comparisons with other products on the same screen (Banik, 2021). The effectiveness of phygital kiosks in retail is further underscored by their role in mitigating risk issues and engaging customers more deeply with the retail environment, promoting a positive attitude towards technology acceptance, enriching the overall phygital retail experience. By providing adequate information and ample trial options, phygital retail stores encourage customers to spend more time evaluating products, thereby improving their knowledge and decision-making confidence (Banik, 2021). Interactive kiosks are also utilized as self-checkout stations in retail, streamlining the checkout experience. These kiosks are designed to eliminate the need for manual barcode scanning by consumers. Instead, customers can place their items on a specific part of the kiosk, where a radio-frequency identification (RFID) tag attached to the product is automatically read, seamlessly gathering price and product information. This approach not only reduces in-store queues but also significantly cuts down on wait times, enhancing the efficiency and overall quality of the shopping journey (Bonfanti et al., 2023).

Phygital technologies are employed to optimize the efficiency of the shopping experience. Yet, the research conducted by Guzzetti et al. (2024) points out that focusing solely on practical features may diminish the entertaining aspects of shopping, which indicates the importance of striking a balance between functionality and enjoyment to boost customer satisfaction and involvement in retail environments. In the luxury sector, empirical findings confirm that interactive storefronts can enhance hedonic value in luxury retail stores, supporting the idea that luxury brands may create multiplatform storytelling experiences (Lawry, 2022). For instance, the "Next Era" experience by Valentino and the "My Gommino" interface from Tod's demonstrate how interactive kiosks not only allow customers to instantly browse and buy products from global inventories but also to participate actively in designing their own custom (Newman, 2017). This evolution turns retail spaces into venues where luxury fashion consumers can display their knowledge and dominate the luxury shopping scene, all in pursuit of fulfilling their desires for enjoyment (Lawry, 2022). Smart mirrors in Thom Browne's fitting rooms represent another innovative example. These mirrors enhance the shopping experience by identifying products, suggesting merchandise pairings, and proposing customized looks (Kansara, 2017). They provide shoppers with instant satisfaction, allowing them to define their style on their own terms, without waiting for feedback from a salesperson or relying on them to fetch more items from the sales floor (Lawry, 2022).

In the food service industry, the adoption of on-site self-service technologies, such as tablets and kiosks, has transformed the way services are delivered, enhancing efficiency and customer satisfaction (Pai et al., 2022). Between 2018 and 2021, the adoption of self-service kiosks in restaurants rose significantly from 1.7% to 5.5%, indicating a broader trend towards automation and technology adoption within the retailing food service industry. This shift led to a greater reliance on touchless services (Yoon, 2023). Interactive kiosks in quick-service restaurants present menu options for customers to choose from, offer deals based on the customer's selections, and process payments. Similar to a traditional register manned by a cashier, the kiosk forwards the completed order to the kitchen's computer system once payment has been made. At establishments like McDonald's, the introduction of interactive kiosks combined with mobile ordering apps has led to an increase in sales, improved customer experience by offering greater control and customization of orders and has helped reduce waiting times. Furthermore, these technologies have enabled restaurants to serve more customers during peak hours, easing the workload on staff and enhancing overall customer satisfaction (Akcarn, 2020). Restegar et al. (2021) investigated customer perceptions of self-service kiosks in quick-service restaurants. Their study aimed to understand factors driving customer use and developed a model integrating the Technology Acceptance Model (TAM) and satisfaction models to analyze customers' behavioral intentions. Using an online survey of McDonald's customers, they found that perceived usefulness and trust significantly affect user enjoyment and satisfaction (Restegar et al., 2021). In the study made by Na et al. (2021) it has been extended the inquiry to the realm of demographic influences, specifically gender, on the adoption and continued use of self-service kiosks. Their research scrutinizes different aspects

of the Technology Readiness Index (TRI) aspects (optimism, innovativeness, discomfort, insecurity) and the intention to continue using self-service kiosks in restaurants. They found that innovativeness and optimism enhance, while discomfort decreases, the intention to keep using kiosks. Insecurity didn't significantly affect usage intentions. Importantly, gender was a key factor, with men more likely to continue using kiosks than women, especially regarding the impact of innovativeness on usage intentions, suggesting gender-specific considerations in kiosk design and implementation. Furthermore, Marinakou et al. (2023) conducted an investigation into the factors affecting customer satisfaction and their willingness to reuse self-service kiosks in Bangkok's fast-food industry. Utilizing a quantitative method, the study gathered data through an online survey, reaching a diverse demographic in terms of age and prior kiosk experiences. The findings indicated a significant acceptance and satisfaction with kiosk technology, suggesting that users are inclined to use it again. However, the study did not specifically examine how customer experiences and satisfaction with self-ordering kiosks differ across age groups (Marinakou et al., 2023). Moreover, Kim et al. (2023) research, which aimed to explore how self-service kiosks affect customer experiences and intentions to revisit quick-service restaurants, provides crucial insights into the factors driving consumer use of self-service kiosks. Gender-specific analysis indicates a disparity in attribute weighting for kiosks between men and women. Men are shown to favor customization to a greater extent, whereas design holds more significance for women. However, the outcome of the analysis suggests that enjoyment is valued by both men and women alike. Despite restaurants being praised for their health security measures, they were criticized for lacking in design and enjoyment aspects, with a notable impact on improving the kiosk experience for female customers (Kim et al., 2023). This research suggests that the retailing food sector, akin to the luxury sector, should adopt a phygital strategy that transcends efficiency by deeply understanding the real reasons customers utilize kiosks.

The current body of literature highlights significant interest in incorporating kiosks into phygital strategies, appealing to a broad audience. Although some studies suggest variations in technology adoption, it is important to note that there is not sufficient research to conclusively determine preferences across different age groups. Exploring the factors that impact customer loyalty towards quick-service retail outlets, particularly through the use of kiosks, and examining the variation in these motivational factors across different generations are essential for acquiring a more profound understanding of how phygital strategies can be effectively implemented within the retailing food industry. Basing on these premises, we developed the research questions as follows:

RQ1: Does the degree of interest in kiosks vary across different generations?

RQ2: To what extent does a positive attitude towards technology influence customers' motivation to use kiosks for purchasing retailing food products?

RQ3: How does the motivation for using kiosks to buy retailing food products vary across different generations?

Methodology. To better explore the phenomenon and address the research questions, a quantitative analysis was conducted by administering a questionnaire to 874 respondents. This analysis was performed using SPSS v. 28 software and involved first conducting an independent sample T Test to compare the means of two distinct groups to determine if significant differences exist between them. Additionally, a repeated-measures ANOVA analysis was conducted, as this method allows for the examination of differences between means within pairs using a single inferential test, thereby revealing which variable is most influential and where significant differences may be found. Finally, a regression analysis was performed to understand the relationship between a dependent variable and one or more independent variables. Methodologically, this quantitative study has been conducted through the administration of a survey in December 2023 through Google Forms. Participants were not incentivized and were contacted by social platforms. For data collection, a 20 questions' survey organized into different sections was administered. In order to offer an easier way to answer to questions, we used for some of them a Likert-type scale with a range of 1 to 7 where 1: Strongly disagree and 7: Strongly agree (Ayyildiz et al., 2022).

Following there are the details of the questions we are going to analyze in this paper. In order to understand the degree of interest of using technologies, we asked respondents how much they would be interested in using technology to ease their purchase; they had the possibility to answer based on the Likert scale mentioned above.

The survey construction was undertaken subsequent to a careful review of the pertinent literature, with a focus on identifying analyses deemed interesting from the authors' perspective. To comprehend the motivations toward the use of kiosks when ordering or buying in retailing food shop, we conducted additionally an empirical analysis on retailing companies offering kiosk experiences and a literature analysis on papers regarding this topic (Banik, 2021; Baratta et al., 2022). Building upon this empirical and literature analyses it was asked (on the 7-level Likert scale) which motivations would respondents be interested when using kiosks: 1. Speed up the ordering process; 2. Speed up the combination of products; 3. Calculate calories; 4. Offer additional products; 5. Show QR codes with personalized information; 6. Show QR codes with personalized discounts; 7. Offer specific product combinations; 8. Offer specific promotions.

The survey's questions were tested by three academic experts and two managers who had experience in phygital research.

Participants were contacted, initially through LinkedIn, Facebook, WhatsApp, and email, to provide information about the research project and invite completion of a questionnaire administered online. This means that we reached people from different socio demographic backgrounds. Each respondent was more than 18 years old. The survey was sent with the information about the purpose of the research and an introductory message was used to assure respondents of the anonymity of all data and the confidentiality of the study (Chang et al., 2010). All individuals who, at the time of

the survey, were of legal age and had utilized a kiosk in the last 6 months in the retailing, were considered ideal respondents.

Totally, 1000 surveys were collected of which 126 were discarded because they were not complete. Thus, the total number of valid answers was 874.

The sociodemographic characteristics of the investigated sample are shown in Table 1.

Table 1: Sociodemographic characteristics of the sample

	Characteristics	Number of times (n=874)	Percentage (%)
Gender	Female	558	64%
	Male	316	36%
Age	1996-2004 (GEN Z)	641	73%
	1981-1995 (GEN Y)	100	12%
	1965-1980 (GEN X)	133	15%

Results. To address the first research question, and understand if the degree of interest in kiosks vary across different generations, we have done a T independent test considering as variable of the test the degree of interest in using kiosks and as grouping variables the different generations (Generation Z, Generation Y and Generation X). As showed in table 2, there is a significant difference only between the Generation Z and Generation X respondents. Meaning that between the other generation cohorts there were not important difference.

Table 2: T Test of the degree of interest in kiosks across different generations

Variables	F	Sign.
Gen Z Vs. Gen Y	1.698	0.193
Gen Y Vs. Gen X	0.223	0.637
Gen Z Vs. Gen X	4.483	0.035

In order to answer the second research question, and understand to what extent a positive attitude towards technology influences customers' motivation to use kiosks for purchasing retailing food products, it is pertinent to identify the motivations driving customers to seek a phygital experience through the use of kiosks when purchasing retailing food products. Therefore, a repeated-measures ANOVA has been made to control and test the differences between the following 8 variables (Speed up the ordering process; Speed up the combination of products; Calculate calories; Offer additional products; Show QR codes with personalized information; Show QR codes with personalized discounts; Offer specific product combinations; Offer specific promotions), with the dependent variable regarding the appreciation of the use of technology for making purchases. Each variable considered, as shown in table 3, is significant.

Table 3: Motivations toward using kiosks

Variables	F	Sign.
Speed up the ordering process	34.554	<.001
Speed up the combination of products	24.800	<.001
Calculate calories	9.971	<.001
Offer additional products	21.866	<.001
Show QR codes with personalized information	22.311	<.001
Show QR codes with personalized discounts	28.729	<.001
Offer specific product combinations	23.888	<.001
Offer specific promotions	23.364	<.001

To determine to what extent a positive attitude towards technology influences customers' motivation to use kiosks for purchasing food products and therefore answer deeper to RQ2, we carried out a linear regression analysis where the appreciation of the use of technology for making purchases is the dependent variable and the 8 variables are the independent ones. The regression model is significant, $F(8;865) = 32.987$; $p < .001$, with an R2 equal to .234. Furthermore, as shown in the left part of table 4, three ("Speed up the ordering process", "Show QR codes with personalized discounts" and slightly significant "Offer additional products") out of the eight variables have a positive and significant Beta value on the appreciation of the use of technology for making purchases, indicating that they positively would use kiosks in order to first of all save time, have personalized discounts and have additional products offered.

To answer RQ3, we thought it intriguing to ascertain whether, based on different generations, any variable stood out as particularly noteworthy. Thus, we conducted a regression analysis across various generational cohorts. All the regressions are significant. For the Generation Z, specifically those born between 1996-2004, the regression model is significant, $F(8;632) = 22.534$; $p < .001$, with an R2 of .222. Moving to Generation Y, born from 1981-1995, the regression model is significant, $F(8;91) = 13.257$; $p < .001$, with an R2 of .255; Generation X, born between 1965-1980, also shows a significant regression model, $F(8;124) = 9.172$; $p < .001$, with an R2 of .372.

As it can be observed in table 4, each generation exhibits distinct preferences regarding their motivations for using kiosks when making a food product purchase. The Generation Z demonstrates a preference for “Speed up the ordering process,” “Offer additional products.” and “Show QR codes with personalized information”. Generation Y, on the other hand, reaffirms the interest in “Speed up the ordering process” and also exhibits interest in “Show QR codes with personalized discounts”. Finally, it is noteworthy that those born in Generation X “Offer specific product combinations” and “Offer specific promotions”.

Table 4: Regression model between technology’s appreciation and motivation variables based on different generation

Variables	General			1996-2004			1981-1995			1965-1980		
	Beta	F	Sign.	Beta	F	Sign.	Beta	F	Sign.	Beta	F	Sign.
Costant		10.703	<.001		7.898	<.001		3.602	<.001		5.388	<.001
Speed up the ordering process	0.250	5.305	<.001	0.249	4.734	<.001	0.302	2.285	0.025	0.289	1.718	0.088
Speed up the combination of products	0.031	0.626	0.531	-0.008	-0.139	0.890	0.121	0.838	0.404	0.129	0.741	0.460
Calculate calories	-0.062	-1.638	0.102	-0.066	-1.545	0.123	-0.093	-0.781	0.437	0.095	0.771	0.442
Offer additional products	0.087	1.923	0.055	0.119	2.295	0.022	0.075	0.522	0.603	-0.107	-0.859	0.392
Show QR codes with personalized information	0.075	1.590	0.112	0.103	1.976	0.049	-0.236	-1.338	0.184	0.052	0.380	0.705
Show QR codes with personalized discounts	0.128	2.314	0.021	0.074	1.206	0.228	0.394	2.185	0.031	0.077	0.465	0.642
Offer specific product combinations	0.089	1.721	0.086	0.043	0.736	0.462	0.066	0.380	0.705	0.416	3.014	0.003
Offer specific promotions	-0.041	-0.735	0.463	0.040	0.659	0.510	-0.136	-0.665	0.507	-0.314	-2.114	0.037

Significant diversity emerged from the analyses. Regarding the degree of interest in using kiosks across different generations, there is a significant difference only between the Generation Z and Generation X respondents. Concerning motivation toward using phygital devices, all variables considered in the ANOVA analysis were found to be significant for respondents; moreover, as resulted from the regression analysis three out of the eight variables have a positive and significant Beta value on the appreciation of the use of technology for making purchases, indicating that they positively would use kiosks when ordering food products in order to save time, have personalized discounts and have additional products offered. In addition, in terms of how generations exhibit distinct preferences regarding their motivations for using kiosks when making a retailing product purchase, Generation Z and Y are interested in using them in order to speed up the purchase process, while Generation x does not exhibit interest in saving time. This means that as age decreases, the interest in using kiosks to save time increases. Regarding other motivations, Generation Z demonstrates a preference also for having additional products offered and have personalized information. Generation Y, on the other hand, exhibits interest in having personalized discounts. Finally, Generation X would like to have offers with specific product combinations and specific promotions.

Research limitations. The study has the merit of contributing to the advancement of knowledge related to the topic of phygital, specifically kiosks, in the retailing food industry, a topic that is still under-researched in the literature. However, the interpretation and generalization of the results presented must take into account some limitations. First, the sample may not be representative of the Italian population, and the analysis did not take a cross-sectoral approach. Moreover, some types of motivations to use kiosks were tested only by few academic experts and managers who had experience in phygital research.

Managerial implications. In terms of managerial implications, the consistency of findings and the data collection methods underscore the necessity for food retailing companies to strategically comprehend and harness consumer motivations for utilizing kiosks in purchasing their food products.

Key insights reveal that consumers are primarily motivated by the willingness to buy other related products, the possibility to save time and to offer customer personalized discounts, while the methods of phygital often affect both the cost and time of supply as well as generate new challenges related to the management of a more complex and changing environment. These factors not only enhance the customer experience but also serve as pivotal elements in driving sales and fostering brand loyalty. Through these results, enterprises can develop and offer additional products, personalized discounts, and promotions that appeal to different generational preferences. Retailers can consider integrating kiosk technology in their stores, especially targeting younger generations, to enhance the shopping experience and increase customer engagement.

Originality of the paper. Phygital experiences are developing very fast in the last years among businesses, including in the retailing food industry. The adoption of interactive kiosks has led to significant benefits, including increased sales, improved customer experiences, and enhanced operational efficiency. Moreover, studies such as those by Rastegar et al. (2021) and Na et al. (2021) underscore the importance of understanding customer perceptions and demographic influences on technology adoption to maximize the effectiveness of kiosks.

However, especially in the retailing food industry, the use of kiosks by consumers often concerns the possibility to save time, have personalized discounts and have product combinations. Kiosks thus become instrumental in creating customer value and for this reason they are increasingly developed by retailing food restaurants, especially when they are point of a chain

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Retail Internationalization and Innovation: A systematic literature review

MICHELE BADOLATO¹

Abstract

Retail internationalization (RI) has garnered significant scholarly attention since the late 1980s, yet a comprehensive systematic review of the literature remains lacking. Building upon previous efforts, this paper undertakes an exhaustive examination of RI literature spanning three decades. Through bibliographic, network, and cluster analyses, we aim to elucidate key themes, trends, and gaps within the discourse. Notably, our study tries to extend beyond summarization to explore the underexplored potential link between retail internationalization and innovation. Addressing three central research questions, we interrogate the current state of RI literature, assess the integration of innovation therein, and propose future research directions. Our methodological framework, informed by established systematic review protocols, ensures rigor and comprehensiveness. The findings highlight temporal patterns, influential authors, leading journals, and thematic clusters within the RI literature. Moreover, the analysis identifies a burgeoning interest in digital commerce and innovation, underscoring a crucial area for future inquiry. Ultimately, this paper contributes to advancing understanding and guiding future research endeavors in the dynamic field of retail internationalization, with few managerial implications.

Please note that this paper is still a work in progress and the results are not definitive. Future work around the link between internationalization and innovation is needed.

Key words: Retail internationalization; literature review; bibliometric analysis; network analysis; cluster analysis; innovation

Framing of the research. Retail internationalization (RI) has been a subject of extensive discussion in academic literature since the late 1980s and early 1990s. Despite this prolonged interest, only a limited number of papers have undertaken a systematic review of the literature in this specific domain. Notably, Dimitrova et al. (2018) made a commendable attempt at such a review, focusing on a pre-selected sample of 89 papers spanning from the 1970s to 2016. By doing this study they focused their attention primarily in the following research areas: retail internationalization drivers and impediments, strategies, and performance.

However, to gain a comprehensive understanding of the evolution and nuances within the RI discourse, it is imperative to conduct a thorough and exhaustive review of the existing literature. By doing so, we can mitigate initial biases in paper selection and subsequently identify clusters that encapsulate the main areas of investigation within the RI literature.

Moreover, our interest extends beyond merely summarizing the existing literature. We aim to delve deeper into recent developments, particularly focusing on the role of innovation in the retail internationalization strategy. Innovation has emerged as a critical factor shaping the dynamics of global retail operations, yet its integration into the discourse of RI remains underexplored.

Therefore, this study endeavors to address the following research questions:

RQ1. What is the current state of the literature on retail internationalization, and what key themes and trends have emerged over time?

RQ2. To what extent has the literature explored the relationship between retail internationalization and innovation? What gaps exist in this area of research?

RQ3. What are the potential future directions for research in the field of retail internationalization, particularly concerning the integration of innovation into strategic frameworks?

Purpose of the paper. By addressing the aforementioned research questions, our aim is to make a meaningful contribution to the ever-evolving landscape of retail internationalization, thereby providing valuable insights into potential avenues for further exploration and development in this field.

The ultimate objective of this paper is twofold: firstly, to deepen understanding of the research topic by delving into its key areas of study and focusing on its evolution over the past three decades through bibliographic, network, and cluster analyses. Secondly, we endeavor to uncover potential connections between retail internationalization and innovation, while also surveying existing literature to ascertain what has already been explored and documented in this realm.

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Methodology. In accordance with the seminal work "Systematic Reviews and Meta-Analysis" by Littel et al. (2008), our systematic literature review was conducted following a meticulously organized, transparent, and replicable process. This methodological framework consisted of a structured 5-step program, designed to ensure methodological rigor and comprehensiveness in our review:

1. *Database and Keywords Selection:* We began by selecting Scopus as our primary database, a choice informed by its extensive coverage across various disciplines and journals. Employing Boolean operators and wildcards, we meticulously curated a set of keywords to capture the essence of our research inquiry. Notably, we leveraged wildcard symbols (*) to encompass variations of key terms, such as "retail*" and "international*," ensuring inclusivity of relevant literature across article titles, abstracts, and keywords.
2. *Database Search:* Our initial database search involved amalgamating selected keywords using the Boolean operator "AND," coupled with additional criteria specifying English language articles published within the past three decades (1994 to 2024). This broad search yielded a considerable volume of 4,309 papers. However, upon preliminary assessment, it became evident that the scope was overly expansive and heterogeneous.
3. *Filtering Articles per Keywords and Area:* Recognizing the need for refinement, we conducted a second, more targeted search. This involved refining our search parameters to exclusively retrieve articles featuring the keyword "retail*" in their titles, while replacing the wildcard-enhanced "international*" with the precise term "internationalization." We focused our attention on the specific subject area Business, Management and Accounting. Consequently, this approach yielded a more manageable subset of 223 documents.
4. *Selecting Articles by Reviewing Titles/Abstracts:* To further streamline our dataset, we meticulously scrutinized the titles and abstracts of retrieved articles. Through this process of meticulous review and exclusion, we distilled our dataset to 193 papers deemed most pertinent to our research objectives.
5. *Final Selection by Reading Articles in Full:* The final stage of our literature review entailed a thorough examination of the full texts of the selected articles. By engaging in comprehensive reading and analysis, we identified and retained 170 documents that offered the most relevant insights and empirical findings pertaining to our research focus.

We proceeded to create a database with these 170 articles and for each of them we collected title, authors, year of publication, publication journal, abstract, number of citations, and keywords. For simplicity the number of citations were collected from Scopus (on February 28th). Higher values in terms of number of citations could be find if we look at the same articles on Google Scholars.

Armed with this curated dataset, facilitated by the Zotero reference management program, we proceeded to conduct a comprehensive bibliometric analysis. This analysis encompassed both descriptive, network and cluster-based approaches, aimed at uncovering key trends, patterns, and interrelationships within the literature on retail internationalization (RI).

For the descriptive analysis, we utilized a combination of Microsoft Excel and PowerBI to explore various facets of RI research, including prominent journals, publication trends over time, influential papers, and prolific authors. Additionally, we employed network analysis techniques, employing software such as VOSViewer, to visualize co-authorship networks and co-occurrence of keywords.

Building upon the work of Dimitrova et al. (2018), we adopted a clustering approach to categorize RI literature into distinct thematic clusters. Through meticulous examination of article content, we delineated four primary clusters focusing on RI Process, RI Strategy, RI Performance, and RI Success/Failure. This nuanced analysis not only elucidated the prevailing themes within the literature but also shed light on potential research gaps and avenues for future inquiry. Additional information was extracted from the papers about the sectors and countries studied.

Results. This section presents the results of the descriptive, network, and cluster analyses conducted to fulfill the objectives of this study.

Descriptive Analysis

Publication Distribution Across Journals

Out of the final sample of 170 articles on retail internationalization, an examination of publication distribution across journals provides valuable insights. Figures 1 and 2 depict the distribution of publications and citations per journal, respectively.

Figure 1 illustrates the dominance of the "International Review of Retail, Distribution and Consumer Research" journal, which boasts the highest number of publications with 28 distinct papers. This prominence is notably ahead of the second-ranked "International Journal of Retail and Distribution," which published only 14 papers.

Figure 1 - Main Journals per n. of publications.

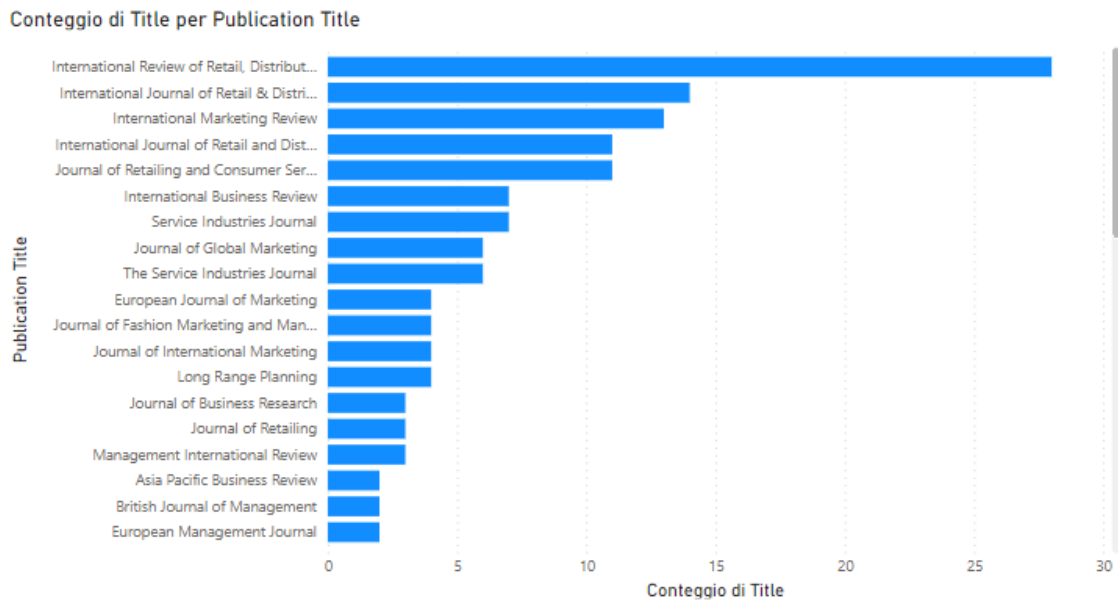
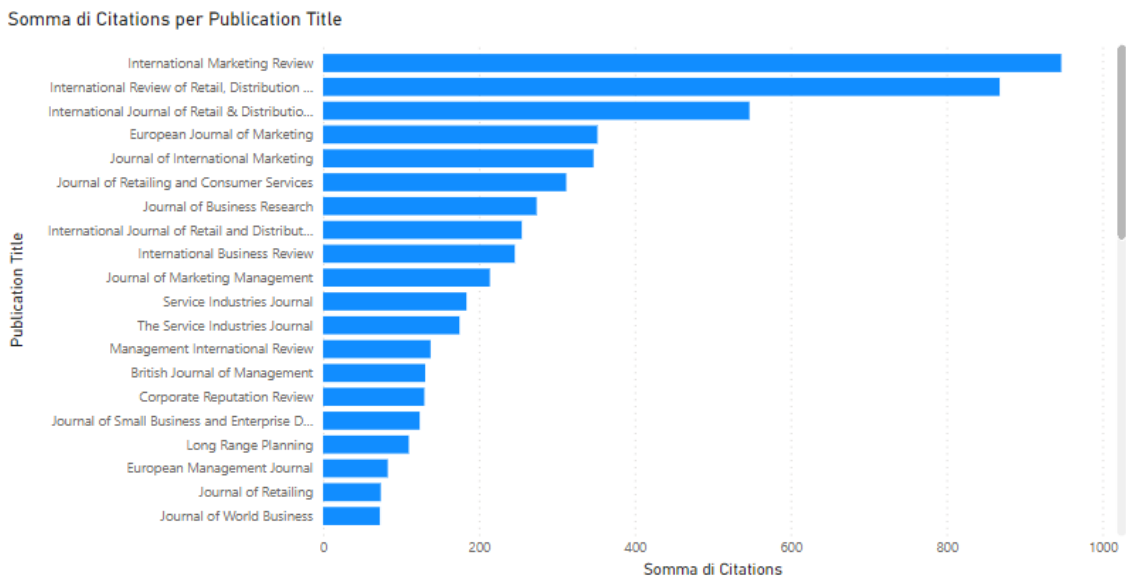


Figure 2 showcases the citation performance of these journals. Despite its lower publication count, the "International Marketing Review" journal emerges as a leader in citations, accumulating 947 citations across 13 published articles. Following closely behind is the "International Review of Retail, Distribution and Consumer Research," with 868 citations.

Figure 2 - Main Journals per n. of citations.



The top five journals, ranked by the number of citations, are the "International Marketing Review," "International Review of Retail, Distribution and Consumer Research," "International Journal of Retail & Distribution Management," "European Journal of Marketing," and "Journal of International Marketing."

Temporal Trends in Publication

A temporal analysis of publication trends sheds light on the evolving interest in retail internationalization. As depicted in Figure 3, the distribution of publications over the years reveals notable patterns.

Figure 3 - Number of Publications per Year



The data indicates that recent years have not witnessed a surge in publications on retail internationalization, with only 10 out of 170 papers published since 2020. Similarly, the 1990s saw relatively modest activity in this research domain, with 20 articles published between 1994 and 1999.

The most prolific period in retail internationalization research occurred between 2004 and 2014, during which 94 out of 170 papers were published. Notably, 2007 emerged as a standout year in terms of publications, with 12 articles contributing to the scholarly discourse in this field.

To fulfill the aim of the paper, the results of the descriptive, network and cluster analysis are presented in the following section.

Leading research in Retail Internationalization

Following the selection criteria of articles with more than one hundred citations, our analysis narrowed down to thirteen articles out of the initial pool of 170. These significant contributions represent pivotal works that have garnered substantial scholarly attention within the field of retail internationalization. The complete list of these influential articles is provided in Table 1 below.

Table 1 - Top Articles per n. citations

Article Title	Citations
Internationalization of retailing operations	214
The retail internationalisation process	155
Psychic distance: Antecedents, retail strategy implications, and performance outcomes	153
Failure in international retailing: Research propositions	145
Lessons learned from unsuccessful internationalization attempts: Examples of multinational retailers in Chile	137
Brands without boundaries – The internationalisation of the designer retailer’s brand	134
Psychic distance and the performance of international retailers: A suggested theoretical framework	133
Corporate Branding, Retailing, and Retail Internationalization	130
Flagship stores as a market entry method: The perspective of luxury fashion retailing	130
The role of store image in retail internationalisation	126
Power and control in international retail franchising: Evidence from theory and practice	123
International expansion of retail firms: a theoretical approach for future investigations	116
Retail internationalization and retail failure: Issues from the case of Marks and Spencer	115

Among the selected articles, one standout piece is "Internationalization of Retailing Operations" by Dawson, J.A., published in 1994. This seminal work has surpassed 200 citations, solidifying its status as a foundational pillar in the theoretical development of the retail internationalization process. Dawson's paper delineates the definition of international retail operations, emphasizing its operational scope across multiple countries. Furthermore, Dawson delves into the underlying motives driving internationalization, drawing upon Dunning's seminal work (1981, 1988) to elucidate the key factors: owner-specific advantages, location-specific advantages, and internationalization advantages. Additionally, the paper critically evaluates various mechanisms of internationalization, including internal expansion, mergers or takeovers, and franchising, while also tracing the trajectory of major retailers' internationalization efforts from the 1970s to the 1990s.

Another noteworthy contribution is the work of Evans, J. et al. (2008), titled "Psychic Distance: Antecedents, Retail Strategy Implications, and Performance Outcomes." In this study, the authors present a comprehensive conceptual model elucidating the intricate relationship between psychic distance and organizational performance within the retail sector. Integrating organizational factors such as international experience and decision-making centralization, alongside entry strategy considerations and retail strategy implications, the model offers valuable insights for retailers navigating psychically distant markets. The findings underscore the importance of adopting low-cost/low-control entry strategies and adapting retail strategies to align with market dynamics in psychically distant environments. However, the study also highlights the potential performance implications associated with such strategic responses.

Network Analysis Co-authorship analysis

To conduct the co-authorship analysis, we utilized the Zotero program to generate RIS files, facilitating the integration of all 170 articles into the VOSviewer software. The following configurations were applied in VOSviewer to generate visual maps, as depicted in Figure 4 below:

1. Map Based On: Bibliographic Data
2. Read Data From: Reference Manager Files RIS
3. Type of Analysis: Co-authorship
4. Unit of Analysis: Authors
5. Counting Method: Full Counting
6. Minimum Number of Documents of an Author: 2 and 3
7. Number of Authors Selected: Total Number of Authors
8. Show: All Items

Among the 232 authors included in the analysis, 66 and 30 authors met the specified thresholds of 2 and 3, respectively.

The co-authorship analysis unveils a robust core of research activity in retail internationalization primarily concentrated between 2000 and 2010. Within this network, certain authors emerge as particularly influential, notably Alexander, N., Burt, S., and Hutchinson, K.

Figure 4 - Co-Authorship analysis



As just mentioned, Nicholas Alexander, a Professor of Marketing at Lancaster University (England, UK), stands out as a prominent figure in this domain. As of March 13, 2024, his Google Scholar profile reflects an impressive citation count of 6,209, with an h-index of 41 and an i10-index of 66. Alexander's research interests predominantly revolve around international retailing and retail marketing. Noteworthy collaborations include strong research ties with Barry Quinn from Ulster University (Northern Ireland, UK) and Annie Marie Doherty from the University of Strathclyde (Scotland, UK).

Ulterior emerging networks have surfaced in recent years, driven by authors such as Mccoll, J., Moore, C., and Kim, S. However, these networks are relatively small and closed, indicating the potential for further collaboration to enhance the dissemination, application, and advancement of knowledge in this field.

Keywords analysis

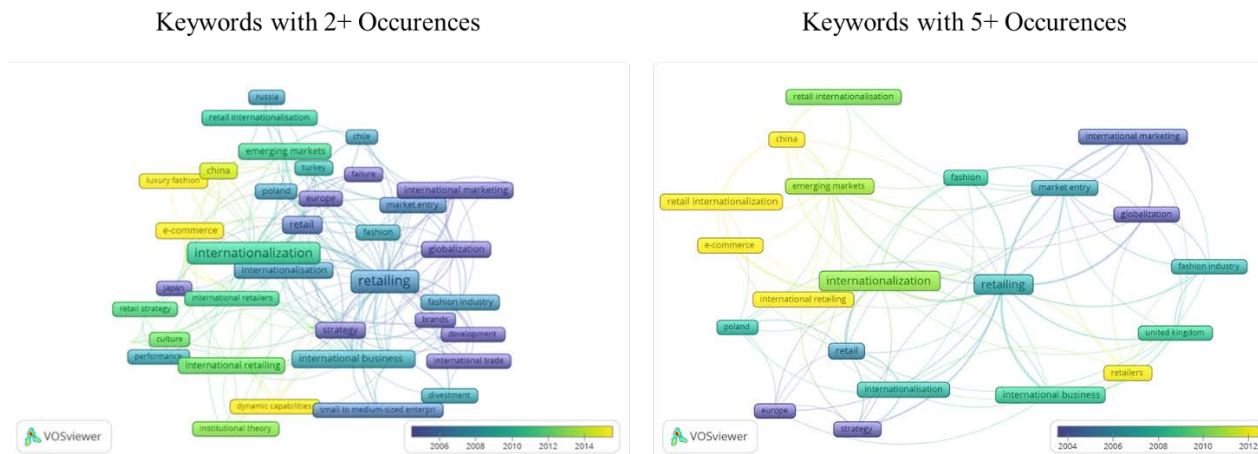
In parallel to the co-authorship analysis, we conducted a keyword analysis utilizing the VOSviewer software, which help us in the creation of the visual maps illustrated in Figure 5. The following settings were applied:

1. Map Based On: Bibliographic Data
2. Read Data From: Reference Manager Files (RIS)

3. Type of Analysis: Co-occurrence
4. Unit of Analysis: Keyword
5. Counting Method: Full Counting
6. Minimum Number of Occurrences of a Term: 2 and 5
7. Number of Terms Selected: Total Number of Items
8. Show: All Items

Among the 403 terms analyzed, 91 and 21 terms were selected based on the thresholds of 2 and 5 occurrences, respectively.

Figure 5 - Keywords analysis



Beyond the expected keywords such as "internationalization" and "retailing," our analysis reveals the presence of different countries or regions as significant focal points. Notably, terms such as "Europe," "Poland," "United Kingdom," "China," and "emerging markets" emerge as prominent co-occurring keywords. A nuanced examination of the most frequently occurring terms reveals distinct temporal trends. For instance, the focus on European regions is evident primarily during the early 2000s, whereas research interest in China and emerging markets becomes pronounced only after 2010.

Furthermore, keywords such as "performance," "divestment," "market entry," "globalization," and "strategy" feature prominently in the analysis, indicating key thematic areas within the literature on retail internationalization. Notably, the last three terms mentioned above also emerge from the network analysis of keywords with five or more occurrences, underscoring their significance within the scholarly discourse.

Of particular interest for our systematic literature review in retail internationalization is the emergence of the keyword "e-commerce." This term, appearing predominantly in recent years, particularly after 2014, reflects a growing scholarly interest in the intersection of retail internationalization and digital commerce. Interestingly, only this term stands out as a keyword potentially correlated with innovation, highlighting a notable gap in the current literature. While this analysis provides just a high-level overview of the thematic focus of various papers, it suggests that innovation remains relatively underexplored within the context of retail internationalization.

Cluster Analysis

Following the process made by Dimitrova et al. (2018), we have developed a cluster analysis in which we have divided our sample of articles in 4 different groups: RI Process, RI Strategy, RI Performance and RI Success/Failure

The clusterization is very broad in order to comprehend almost all of the documents gathered, in fact we proceeded in excluding just two papers which are literature reviews of the argument. A complete list of papers analysed and grouped in the different categories can be found in the Appendix.

RI Process

51 papers out 170 falls in this category. The cluster of retail internationalization process comprehend all the documents that want to:

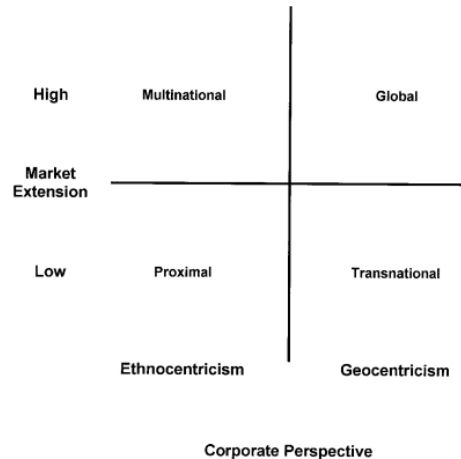
1. Give a theoretical approach or framework to the topic; or
2. Study the whole internationalization process for a specific geographical region or industry; or
3. Discuss drivers or impediment to the internationalization process.

We can say that this cluster represent the base of the research, considering that contains all the papers that try to give a broader overview of the topic and are not focused specifically on some firms or strategies.

Besides the already cited paper by Dawson J.A. "Internationalization of Retailing Operations", another works from the same authors falls in this group, titled "Strategy and Opportunism in European Retail Internationalization", in which expose the retail internationalization process in Europe and focus his attention on the opportunism of the large retailer international activity.

Another very important article in this cluster is the one written by Nicholas Alexander “The Retail Internationalization Process”. This paper develops a very important framework for the retail internationalization process dividing it in two separate terms: market extension and company perspective. By these two different points of view, the author elaborates a matrix that is now very used in internationalization studies (see fig.7); and he additionally state that conceptual frameworks developed in non-retail or non-service environments do not explain the process of retail internationalization.

Figure 6 - Matrix of RI Process; Source: The Retail Internationalization Process by Nicholas Alexander (2000)



In terms of study of RI Process in a specific area or sector, the literature shows a large interest in the European Countries. Additional studies have been conducted for Asian countries (China and Japan); USA and South America. Considering the sector analysed, grocery, fashion and pharma were the industries in which the literature focus its attention the most.

RI Strategy

The second group of articles is represented by the cluster of RI Strategy, which is the largest with 78 papers out 170. When we talk about RI strategy, we focus our attention on documents that study the way international firms operate, via particular case studies or analysing a specific possible strategy attainable by them. However, inside this cluster we find also paper that research drivers and impediments that could influence in several way the internationalization strategy of firms. The most present focuses in this cluster are analysis of strategies connected to entry methods, business models, retail formats, time of entry, market e location analysis, motives of internationalization, standardization versus adaptation, and few others. Overall, we can say that, in respect to the RI Process cluster, this one is more pragmatic and concentrated on the behaviours of firms instead of analysing more at a macro-level the internationalization process. This cluster is particularly interesting for our study on the link between internationalization and innovation. We find that few papers talk about innovation in the internationalization strategies, focusing primarily on online channel and business model innovation.

While e-commerce and online channel research is broad and vary and, even in this particular area of retail internationalization, several papers are focused on this topic, a more interesting approach to the innovation is related to business model innovation, and we find particularly interesting the article of Cao et Al. (2018) in which they aim to identify different patterns of business model innovation which enables international retailers to rebuild their core business logic in new host countries. Focusing their attention to China as the single host country, they compare business model changes of 15 international retailers from various home countries. The findings of the study suggest six routes of retail business model innovations, categorized under three patterns in terms of firms organizational learning capability (exploitation vs. exploration) and resources to which they deploy (home-based vs. host-based). This paper could be an important starting point toward a deeper understanding of the link between retail internationalization strategies and innovation.

RI Performance and RI Success/Failure

The last two clusters, notably RI Performance and RI Success/Failure are similar in terms of when the analysis presented in the papers within the groups have been made. Both of these clusters, in fact, focuses their attention on the analysis of firms after their internationalization process and application of their strategies.

RI Performance cluster contains 23 articles and comprehend the analysis of the economic performance of the internationalization operations. Interesting papers are focused on the study of performance influenced by different factors, such as physical distance (Evans, J. et al., 2000, 2008), speed of internationalization (Mohr, A. et al, 2014, 2017) up to the recent study of the impact of digitalization (Batsakis, G. et al. 2023).

This last paper, interesting also for our innovation focus, examines the relationship between retailer internationalization and performance (I-P relationship), and how this relationship is correlated upon both grocery and non-grocery sectors. In their analysis they found that the I-P relationship is U-shaped, because internationalizing retailers initially incur greater costs in their international expansion owing to their unfamiliarity with foreign markets, but as their foreign presence increases, they benefit from greater market power, experience, and scale economies. Then, they exclaim that as grocers suffer from higher levels of liability of foreignness due to increased requirements for host country embeddedness, non-grocers benefit more from internationalization with any gains and losses further amplified by digitalization.

Moving now into the last cluster of papers, *RI Success/Failure* contains 16 documents and the main difference, if compared with the cluster of *RI Performance*, is that the articles present in this group are less focused on quantitative analysis of retailers' performance, and more interested in studying cases and motives of successful and unsuccessful attempts in internationalization. Particular attention is dedicated to the matter of divestment after failing the internationalization process.

RI and Innovation

Apart from few papers discussed above, the link between RI and innovation is weak and not very well developed. Thanks to this literature review we can say that there exists an important gap in the literature of the possible leading role of innovation in the RI process, and even more importantly, RI strategies.

A retailer can consider different methods of innovation, the most important methods linkable with RI strategies could be related to product and service innovation, store design and layout innovation, technological and supply chain innovation, or even marketing innovation.

The most important paper about the impact of innovation applied into a RI strategy is the article titled "Innovation in retail internationalisation: Tesco in the USA" by Lowe and Wrigley (2009) in which they examine the market entry of the UK's largest retailer (Tesco) into the USA. Tesco's launch of a new brand - Fresh & Easy Neighborhood Markets - is an innovative market entry strategy and this unusual attempt has been examined by the authors in terms of ten 'dimensions of innovation', like some generic dimension such as product innovation, service innovation, accompanied by more specific ones such as innovative locational strategies, and Physical market entry preceded by online entry.

This article and more specifically, this framework given by the ten dimension of innovation could be an interesting starting point for the expansion of this research area.

Research limitations. While striving for a comprehensive analysis, this study acknowledges few limitations, for instance:

- *Scope of Literature Review:* Despite efforts to be exhaustive, limitations in database coverage, search terms, and inclusion criteria may have led to the inadvertent exclusion of relevant articles, potentially biasing the findings.
- *Publication Bias:* Focusing primarily on peer-reviewed journal articles may introduce publication bias, overlooking valuable insights from gray literature, conference papers, and unpublished works.
- *Language Limitation:* Restricting the search to English-language articles may have overlooked significant contributions published in other languages, particularly in regions with active retail internationalization, for example Chinese-speaking countries.
- *Methodological Constraints:* While following established protocols, variations in search strategies, inclusion criteria, and data extraction methods could introduce inconsistencies or biases. Additionally, reliance on citation counts from Scopus may not fully capture article impact.
- *Interpretation Bias:* Despite efforts for objectivity, qualitative analyses may be subject to interpretation bias influenced by researcher subjectivity and preconceptions.

Addressing these limitations requires transparent reporting, robust methodologies, and cautious interpretation. Future research should aim to overcome these constraints for a nuanced understanding of retail internationalization dynamics.

Managerial implications. The findings of this paper offer valuable managerial implications for businesses involved in or contemplating retail internationalization. Managers can utilize insights from thematic clusters (*RI Process*, *RI Strategy*, *RI Performance*, and *RI Success/Failure*) to inform strategic decision-making. Understanding drivers, challenges, and strategies aids in formulating effective market entry and expansion plans.

In addition, analysis of publication trends helps identify promising markets, like the growing attention the Asian region, and determine suitable entry strategies, especially by looking at the *RI Strategy* cluster which can offer insight of existing case studies.

Case of unsuccessful internationalization attempts are present in the *RI success/failure* clusters, so manager can look at the main articles in this group and try to understand the main reasons behind the failures of RI.

Finally, recognizing innovation's role, managers should prioritize its integration into their strategic frameworks. Understanding how innovation enhances competitiveness guides the development of innovative products, services, and business models for international markets, but there is much more to develop in this area.

Originality of the paper. The originality of this paper lies in several key aspects. While previous studies have examined retail internationalization, this paper offers a comprehensive and systematic review spanning three decades. By synthesizing a large body of literature using rigorous methodologies, the paper provides a nuanced understanding of the evolution, trends, and gaps within the field.

In addition, unlike other literature reviews focusing solely on retail internationalization, this paper extends its analysis to explore the relationship between retail internationalization and innovation. By identifying and analyzing trends related

to innovation within the context of retail internationalization, the paper contributes novel insights into an emerging area of research interest. We have found that this link is largely unexplored and further empirical and theoretical research could be needed.

Finally, the paper employs a multi-dimensional analytical approach, combining bibliometric, network, and cluster analyses to uncover patterns, relationships, and clusters within the literature. This holistic approach not only enhances the depth and breadth of the analysis but also provides a more comprehensive understanding of the research landscape.

Appendix

Title	Area
Internationalization of retailing operations	RI Process
The retail internationalisation process	RI Process
Psychic distance: Antecedents, retail strategy implications, and performance outcomes	RI Performance
Failure in international retailing: Research propositions	RI Success/Failure
Lessons learned from unsuccessful internationalization attempts: Examples of multinational retailers in Chile	RI Success/Failure
Brands without boundaries - The internationalisation of the designer retailer's brand	RI Process
Psychic distance and the performance of international retailers: A suggested theoretical framework	RI Performance
Channel power, conflict and conflict resolution in international fashion retailing	RI Strategy
Towards a Taxonomy of International Retail Alliances	RI Strategy
Business model innovation: How the international retailers rebuild their core business logic in a new host country	RI Strategy
Power and control in international retail franchising: Evidence from theory and practice	RI Process
International expansion of retail firms: a theoretical approach for future investigations	RI Process
Retail internationalization and retail failure: Issues from the case of Marks and Spencer	RI Success/Failure
International retail divestment	RI Success/Failure
Retail internationalisation: From formats to implants	RI Strategy
Strategy and Opportunism in European Retail Internationalization	RI Process
A case study on the internationalization process of a 'born-global' fashion retailer	RI Strategy
Business distance and global retailing: A model for analysis of key success/failure factors	RI Success/Failure
SME retailer internationalisation: Case study evidence from British retailers	RI Process
Tchibo Goes Global: Implementing a Hybrid Franchising Strategy at Germany's Leading Coffee Retailer	RI Strategy
An institutional perspective on retail internationalization success: Home depot in chile	RI Success/Failure
Retailers' foreign market entry decisions: An institutional perspective	RI Process
Product and brand. Critical success factors in the internationalisation of a fashion retailer	RI Strategy
International expansion and strategies of discount grocery retailers: The winning models	RI Strategy
The role of management characteristics in the internationalisation of SMEs. Evidence from the UK retail sector	RI Process
Business networks and retail internationalization: A case analysis in the fashion industry	RI Strategy
Explaining international retailers' market entry mode strategy: Internalization theory, agency theory and the importance of information asymmetry	RI Process
Internationalization and Performance of Retail Firms: A Bayesian Dynamic Model	RI Performance
Cultural influence on loyalty tendency and evaluation of retail store attributes: An analysis of Taiwanese and American consumers	RI Strategy
The relevance of retailer country-of-origin to consumer store choice: Evidence from China	RI Strategy
Corporate Branding, Retailing, and Retail Internationalization	RI Strategy
Internationalization Speed and Firm Performance: A Study of the Market-Seeking Expansion of Retail MNEs	RI Performance
An empirical inquiry into international expansion of US retailers	RI Process
The international divestment activities of European grocery retailers	RI Success/Failure
Flagship stores as a market entry method: The perspective of luxury fashion retailing	RI Strategy
International retail franchising: A conceptual framework	RI Process
Internationalization in retailing: Modeling the pattern of foreign market entry	RI Strategy
Explaining the effect of rapid internationalization on horizontal foreign divestment in the retail sector: An extended Penrosean perspective	RI Success/Failure
An exploratory framework for analysing international retail learning	RI Literature Review
International retail divestment activity	RI Success/Failure
An investigation into the initial barriers to internationalization: Evidence from small UK retailers	RI Process
The nature of international retail divestment: Insights from Ahold	RI Success/Failure
Determinants of international retail operation mode choice: Towards a conceptual framework based on evidence from French specialised retail chains	RI Strategy
Categorizing patterns and processes in retail grocery internationalisation	RI Process
How do past mode choices influence subsequent entry? A study on the boundary conditions of preferred entry modes of retail firms	RI Strategy
Factors influencing international fashion retailers' entry mode choice	RI Strategy
Foreign Market Entry Strategies in Retail Banking: Choosing an Entry Mode in a Landscape of Constraints	RI Strategy
The outlook for european grocery retailing: Competition and format development	RI Process
Internationalization of emerging market firms: The case of Turkish retailers	RI Process
La mode sans frontieres? The internationalisation of fashion retailing	RI Strategy
Revisiting retail internationalisation: Drivers, impediments and business strategy	RI Process
Shutting up shop: Understanding the international exit process in retailing	RI Success/Failure
Internationalization of retail strategies	RI Strategy
Post-entry internationalisation activity of retailers: An assessment of dynamic capabilities	RI Process
Americans in London: The internationalisation of fashion designer retailing	RI Strategy
Testing the Regional Performance of Multinational Enterprises in the Retail Sector: The Moderating Effects of Timing, Speed and Experience	RI Performance
An empirical study on the timing of big retailers' initial internationalization: Influence of the target market and entry-mode choice	RI Strategy
Retailers[U+05F3] expansion mode choice in foreign markets: Antecedents for expansion mode choice in the light of internationalization theories	RI Strategy
Emerging markets and the internationalisation of retailing: The Brazilian experience	RI Process
Retailing in Europe: 20 years on	RI Process
Regional business networks and the multinational retail sector	RI Strategy

The internationalization of retailing: Factors influencing the choice of franchising as a market entry strategy	RI Strategy
Alternatives for growth and internationalization in retailing	RI Strategy
International retailers' strategic responses to institutional environment of emerging market: Multiple case studies in China	RI Strategy
Internationalisation of large-format retailers and leisure providers in western Europe: Planning and property impacts	RI Strategy
Globalisation, international configurations and strategic implications: The case of retailing	RI Strategy
Determinants of international retail involvement: The case of large U.S. retail chains	RI Strategy
Internationalization of retail banks: a micro-level study of the multinationality-performance relationship	RI Performance
A Conceptual Model of Strategic Considerations for International Retail Expansion	RI Strategy
A specialty store's perspective on retail internationalization: a case study	RI Strategy
Internationalization motives and facilitating factors: Qualitative evidence from smaller specialist retailers	RI Strategy
Integrating embeddedness with dynamic capabilities in the internationalisation of fashion retailers	RI Process
International value chain processes by retailers and wholesalers - A general approach	RI Process
Developing a Framework for the Study of the Internationalisation of Retailing	RI Process
The temporal context of UK retailers' motives for international expansion	RI Strategy
The role of retail internationalisation in the establishment of a European retail structure	RI Process
Intangible assets, international experience and the internationalisation speed of retailers	RI Strategy
Country and firm level factors in international retail expansion	RI Performance
Internationalization Speed of Online Retailers: A Resource-Based Perspective on the Influence Factors	RI Strategy
Paths of the least resistance: Understanding how motives form in international retail joint venturing	RI Strategy
Problems encountered within international retail joint ventures: UK retailer case study evidence	RI Strategy
Equity ownership and control of international joint ventures in the retail sector	RI Strategy
Knowledge and knowledge sharing in retail internationalization: IKEA's entry into Russia	RI Strategy
Internationalization of SME retailer: Barriers and the role of public support organizations	RI Process
The key elements of strategic leadership capabilities to the latecomer firm: the case of RT Mart's success in the Chinese retail industry	RI Strategy
Retail internationalisation from emerging markets: Case study evidence from Chile	RI Strategy
The Internationalisation of Retailing in the Czech and Slovak Republics	RI Process
International expansion and retail sales: An empirical study	RI Performance
The anatomy of retail internationalisation: Daimaru decision to invest in Melbourne, Australia	RI Strategy
European food retailers' evaluation of global markets	RI Process
The growing permanence of pop-up outlets within the international location strategies of fashion retailers	RI Strategy
Internationalization of the biggest Finnish and Swedish retailers in the Baltic States and Russia	RI Strategy
The Impact of Market Orientation on the Internationalization of Retailing Firms: Tesco in Eastern Europe	RI Strategy
A tactical retreat? Conceptualising the dynamics of European grocery retail divestment from East Asia	RI Success/Failure
Foreign market selection of online retailers - A path-dependent perspective on influence factors	RI Strategy
Towards a conceptual model of country market selection: Selection processes of retailers and C&C wholesalers	RI Strategy
Retailer internationalization: Overcoming barriers to expansion	RI Process
First foreign grocery retailer enters the Finnish market -a stakeholder model	RI Strategy
New directions for international retail joint venture research	RI Process
Costco and the Aussie Shopper: a case study of the market entry of an international retailer	RI Strategy
UK retail expansion in North America and Europe A strategic dilemma	RI Process
Measuring the performance of retail managers in Australia and Singapore	RI Performance
Conception and test of a comprehensive model of international strategy for retail companies	RI Process
The development of international e-commerce in retail SMEs: An effectuation perspective	RI Strategy
"It's a new game out there": e-commerce in internationalising retail SMEs	RI Strategy
The influence of a retail firms geographic scope of operations on its international online sales	RI Strategy
The internationalisation of European retailers in America: The US experience	RI Process
The role of e-commerce in the internationalization of Spanish luxury fashion multi-brand retailers	RI Strategy
Supporting retailers to exploit online settings for internationalization: The different role of trust and compensation	RI Strategy
Disentangling the effects of domestic corporate political activity and political connections on firms' internationalisation: Evidence from US retail MNEs	RI Strategy
Foreign retailers in post-WTO China: Stories of success and setbacks	RI Performance
The role of store image in retail internationalisation	RI Strategy
Reciprocal Retail Internationalisation: The Southland Corporation, Ito-Yokado and 7-Eleven Convenience Stores	RI Strategy
Internationalization patterns in fashion retail distribution: Implications for firm results	RI Performance
Retail companies' internationalization behavior and the 2008 crisis	RI Process
Foreign retailers in China: The first ten years	RI Process
Internationalisation of Hypermarket Retailing in Poland: West European Investment and Its Implications	RI Process
The pop-up store as a foreign operation mode (FOM) for retailers	RI Strategy
Internationalization in the process of the Czech retail development	RI Process
Looking back at the 20 years of retailing change in Poland	RI Process
Expansion of Japanese retailers overseas	RI Process
A Study of the Internationalization-Performance Relationship in Global Retailing: The Moderating Role of Brand Standardization and Cultural Diversity	RI Performance
Core competences, strategy and performance: The case of international retailers in China	RI Performance
Innovation in retail internationalisation: Tesco in the USA	RI Strategy
Critical success factors for international fashion retailers entering foreign markets	RI Success/Failure
Consumer co-operatives and retail internationalisation: Problems and prospects	RI Success/Failure
The Planning Implications of New Retail Format Introductions in Canada and Britain	RI Strategy
Does the degree of retailer international involvement affect retailer performance?	RI Performance
The role of business support organisations in the process of retailer internationalisation	RI Process
Internationalisation of pharmaceutical retail sector: Growth opportunities in emerging markets	RI Process
Japanese retailers in Southeast Asia: Strong local partners, shopping malls, and aiming for comprehensive internationalization	RI Process
Retail heaven in a half-pipe: How SMEs can internationalize too	RI Strategy
Firm factors that influence internationalisation and subsequent financial performance of fashion retailers	RI Performance
Identifying the characteristics of small specialist international retailers	RI Strategy
The Effects of Retail Banner Standardization on the Performance of Global Retailers	RI Performance
The standardization-localization dilemma of brand communications for luxury fashion retailers' internationalization into China	RI Strategy
Globalization of food retailing: The case of Latin America	RI Process
Standardized marketing strategies in retailing? IKEA's marketing strategies in Sweden, the UK and China	RI Strategy
Magnitude and intensity of the internationalization of the large distribution retailer: An international comparison	RI Performance

Factors of success and failure for international retailers in Poland	RI Success/Failure
The strategic importance of retail investment in Asia and its implications for the metro group in Asia	RI Performance
Retail internationalisation in practice: Per una in the UK and Taiwan	RI Strategy
The internationalisation of retailing	RI Process
How does the global retailer localize its format?: The case of toys "R" Us and Carrefour in Japan	RI Strategy
The growth and international expansion of an emerging market retailer in Latin America	RI Performance
Developing fashion retail operations to growth in emerging markets	RI Process
Supply chain capabilities for facilitating the internationalisation of retailers-a multiple case study of three Swedish retail companies	RI Strategy
Is Uppsala model valid to fashion retailers? An analysis from internationalisation patterns of fast fashion retailers	RI Strategy
The Internationalisation of Retail Banking: Banco Santander's Journey towards Globalisation	RI Strategy
Coordinating the international retailing firm: Exploratory models and evaluations of structural, systemic, and cultural options	RI Process
A comparative report on the profiles of retailing in the emerging markets of Europe: Turkey, Poland, Hungary, Portugal, and Greece	RI Process
Electronic commerce-based internationalisation of small, niche-oriented retailing companies: The case of Blue Tomato and the Snowboard industry	RI Strategy
Retail internationalization: A review and directions for future research	RI Literature Review
International retail joint venture learning	RI Strategy
Exporting firms and retail internationalization: Evidence from France	RI Process
Internationalization of retail in Poland and Croatia	RI Process
Italian luxury fashion brands in China: A retail perspective	RI Strategy
Direction of luxury fashion retailers' post-entry expansion - the evidence from China	RI Process
Performance implications of Retail Format diversification for international retailers	RI Performance
Exploring brand identity and entrepreneurship as drivers of small specialist retailer internationalisation: a German case study	RI Strategy
Some reasons why foreign retailers have difficulties in succeeding in the Japanese market	RI Success/Failure
Internationalization and digitalization: Their differing role on grocer and non-grocer retailer performance	RI Performance
Performance of International Retailers: Empirical Evidence of an S-Curve Relationship	RI Performance
Motives behind retailers' post-entry expansion - Evidence from the Chinese luxury fashion market	RI Strategy
Luxury fashion retailers' localised marketing strategies in practice - evidence from China	RI Strategy
Internationalization strategies of emerging market multinationals in luxury fashion retailing-Case study of Shandong Ruyi Group	RI Strategy
Traces of foreign retailers-local knowledge-spillovers and strategy adaption within retail internationalization	RI Process
Determinants of website traffic: The case of European fashion apparel retailers	RI Process
Hering, from a global production network player to a regional retail leader	RI Strategy
Factors Affecting European Food Retailers' Internationalisation: An Eclectic Paradigm Application in the Greek Market	RI Performance

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Track 9
Small & Family Business

Dynamics of Change: A Comparative Analysis of Commitment in Family vs. Non-Family Businesses

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Abstract

The challenge of insufficient employee commitment to organizational change significantly impedes management's ability to successfully implement new strategies, a hurdle notably pronounced in family businesses due to a strong adherence to tradition. This study investigates the impact of psychological ownership and effective internal communication-or communication satisfaction-on bolstering commitment to change. This research will suggest propositions to test subsequently with statistical analysis after the collection and analysis of 501 employees' interviews across Italian family and non-family businesses. Our propositions are built on the roots of psychological ownership, and commitment to change. The study also explains how the dynamics between communication, psychological ownership, and commitment vary between family and non-family businesses. This will underscore the critical role of fostering psychological ownership and communication satisfaction in enhancing employee commitment to organizational change initiatives.

Keywords: *Change management, Commitment to change, Communication, Psychological Ownership, family and non-family business*

Framing of the research. *In organizational studies, Moran and Brightman (2001) emphasize the importance of change management for businesses to adapt and thrive amid external pressures. Change management involves rejuvenating an organization's direction, structure, and capabilities to meet stakeholder needs, necessitating updates to procedures, job content, and skills. This adaptability leads to organizational ambidexterity, as described by Tushman and O'Reilly (1996), which is crucial for maintaining stability while promoting innovation. It entails balancing exploitation (optimizing current operations) and exploration (seeking new ideas), enabling companies to manage ongoing operations efficiently while innovating for future success.*

Balancing exploitation, crucial for current success, and exploration, necessary for future sustainability, presents a significant dilemma in change management (Schwarz et al., 2021). This balance is particularly relevant in family enterprises, which represent a significant segment of the global business landscape and are defined by familial ownership, management, and a vision for intergenerational transfer. Despite perceptions of their aversion to change compared to non-family firms (Dessi et al., 2023), family businesses encounter unique challenges, especially during succession, requiring a reevaluation of roles and structures (Dettori and Floris, 2023). Succession is a delicate phase where logical and emotional factors intertwine, significantly impacting business continuity. The challenge of instigating change is underscored by high attrition rates across generations, with only 30% of businesses surviving into the second generation and 10% into the third. Research indicates an innovation gap in family businesses due to their focus on long-term goals and preservation of familial legacy (Casillas & Moreno, 2010; Jell et al., 2015), a trend towards conservatism (Kraiczny et al., 2015; Naldi et al., 2007; Zahra, 2005), and lower adaptability to change (Lubatkin et al., 2007). Failure to implement change can lead to financial losses, decreased market share, and increased costs from cultural disintegration and turnover (Kromah et al., 2024).

There is a consensus in the literature that employee commitment to change is crucial for supporting management innovation; the challenge lies in deciphering the evolution of this commitment over time. This subject's centrality has propelled researchers to investigate the critical factors at both individual (Cunningham, 2006; Herscovitch & Meyer,

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2002; Judge et al., 1999; Wanberg & Banas, 2000) and organizational levels (Cunningham et al., 2002) that significantly influence employee behavior towards supporting management innovation.

In this study, we argue that Psychological Ownership (PO) serves as a crucial perspective for understanding how possessive feelings towards objects bolster individuals' commitment to change. Specifically, this research delves into the effects of PO and transparent internal communication (from now on called CS as "communication satisfaction") on commitment to change (CT from now on)⁶.

The interplay between CS, PO, and CT remains underexplored despite extensive examination of communication's role in change processes,

Purpose of the paper. CT is vital in organizational transformations, guiding individuals' adaptation. The absence of commitment often leads to the failure of change initiatives. Recognized for promoting supportive behaviors, CT involves coping strategies to handle change-related stress and uncertainty. Such strategies are critical for maintaining psychological well-being and facilitating effective change navigation, highlighting the significance of commitment in managing organizational change impacts. The construct of CT is articulated as a motivational state (a mindset) binding an individual to a particular course of action deemed essential for the fruitful execution and realization of a change initiative (Herscovitch & Meyer, 2002). This motivational state manifests in three distinct forms (Meyer, Allen, & Smith, 1993): affective commitment (AC from now on), normative commitment (NC from now on), and continuance commitment (CC from now on).

Employees' support for change is influenced by their commitment type, AC, driven by a positive attitude towards change, enhances proactive support and effective coping with stress related to change. In contrast, CC, stemming from a lack of alternatives, can lead to stress and negatively affect the change process. Contextual factors such as organizational tenure, change frequency, previous change experiences, self-efficacy, participation levels, quality of information, and interpersonal relationships significantly impact CT, according to studies by Rafferty & Griffin (2006) and Wanberg & Banas (2000). The relationship between PO and CT introduces a new dimension to understanding organizational change, emphasizing the importance of employees' feelings of ownership over the change process and outcomes (Pierce et al., 2001; 2009; Dawkins et al., 2015).

Employee commitment is pivotal for adapting to and implementing change, with the absence of commitment being a major failure point for change initiatives. This commitment fosters supportive behaviors and coping mechanisms for dealing with the stress of organizational transitions (Cunningham, 2006; Parish et al., 2008). Recent studies suggest that PO, the emotional and proprietary feelings employees have towards their work and organization, contributes significantly to CT, impacting their support for change initiatives. PO functions at individual and collective levels, affecting workplace motivations, attitudes, and behaviors, and is linked to positive organizational outcomes such as job satisfaction, organizational identification, and commitment (Dawkins et al., 2015; Liu et al., 2012; Mayhew et al., 2007; Sieger et al., 2011).

Organizational change introduces uncertainty and stress, which can be mitigated by effective communication. Communication satisfaction enhances PO by deepening employees' connection to their roles and the organization, crucial for reducing resistance and fostering inclusivity during change. Based on these insights, the study hypothesizes a positive relationship between PO and CT (proposition 1). CS is positively related to commitment to change CT (Proposition 2a), and CS is positively related to PO (proposition 2b). This framework underscores the critical role of employee commitment types, PO, and CS in navigating organizational change, suggesting that fostering a sense of ownership and ensuring clear, inclusive communication are key to successful change implementation.

Methodology. This study is still in progress, and we will test our propositions through statistical analysis to investigate the dynamics among PO, CS and CT. Furthermore, we will examine how the nature of the company, whether family-owned or non-family, impacts the intensity of these relationships.

The study involved 501 questionnaires. Within the sample, 63.5% (N = 318) were men and 36.5% (N = 183) were women. They belonged both to family (N = 320, 63.9%) and non-family (N = 181; 36.1%) companies. Sociodemographic data on age were collected and expressed as intervals. Based on this, the 53% of the sample consisted of participants with "18 to 30" and "31 to 40" years old (N = 131, 26.2% and N = 134, 36.8% respectively).

Will be analyze data using IBM SPSS Statistics software, version 25. The initial steps will include exploring socio-demographic characteristics and key research variables. Analysis of Variance (ANOVA) will be utilized to identify any statistically significant variances among the research variables, specifically to factors such as the type of company (family-owned vs. non-family) and participant gender. Additionally, we will investigate linear correlations to determine significant associations between the variables.

The data collection process will employ a separated questionnaire. The initial segment will solicit socio-demographic details from participants, while the latter will be devoted to evaluating key research constructs through three distinct scales. Each scale will be subjected to reliability analysis via Cronbach's alpha to affirm their dependability.

⁶ For easier reading, the legend of acronyms used in this paper is given here:

- PO psychological ownership
- CS Communication satisfaction
- CT commitment to change
- AC affective commitment
- NC normative commitment
- CC continuance commitment

PO: To assess *PO*, a 10-item scale derived from Avey et al.'s (2009) research will be utilized, categorizing items into five key factors of *PO*: Territoriality, Self-efficacy, Accountability, Belongingness, and Self-identity.

CS: This dimension will be measured using a scale adapted from Zwijze-Koning & de Jong (2007) and the *CSQ* (Downs & Hazen, 1977), comprising 24 items across six sub-dimensions that include aspects like superior-subordinate relationships and interdepartmental communications.

CT: Employing a scale developed by Herscovitch and Meyer (2002), this construct will be quantified using 18 items divided evenly among three facets: Affective, Continuance, and Normative commitment to change. Responses will be captured on a 5-point Likert scale ranging from strong disagreement to strong agreement.

Through this methodological approach, the study aims to rigorously evaluate the interplay between *PO*, *CS*, and *CT*, underpinned by a reliable metric assessment.

Results. Our study is ongoing, and we anticipate the following outcomes based on preliminary analyses:

The ANOVA models are expected to reveal significant differences in the average scores of *AC* based on gender and the type of company. We predict that female participants will have higher *AC* scores compared to males, and employees in non-family businesses will show greater *AC* levels than those in family-owned firms.

Moreover, we believe we can find moderate, positive, and statistically significant correlations between *PO* and *AC* and *NC*. Similarly, moderate and positive associations are expected between *CS*, *AC* and *NC*. *CC* is not predicted to show significant correlations with any research variables.

A significant positive relationship between *PO* and *CS* is probable, suggesting that higher levels of *PO* are associated with greater *CS*.

Variations in the impact of *CS* and *PO* on *AC* are estimated by company type. *CS* may not significantly influence *AC* in family-owned businesses, but *PO* is predicted to have a positive impact. We expect an indirect effect of *CS* on *AC* through *PO*, indicating *PO*'s mediation in this relationship. In non-family companies, both *CS* and *PO* are likely to significantly affect *AC*, with a significant indirect effect of *CS* on *AC* through *PO*, suggesting partial mediation by *PO*. The indirect effects are not expected to differ significantly between family and non-family businesses, indicating a consistent mediation role of *PO* across company types.

Regarding the influence on *NC*, both *CS* and *PO* are anticipated to have significant impacts in family-owned companies, with an expected indirect effect of *CS* on *NC* through *PO*, indicating partial mediation by *PO*. While *PO* is predicted to have a significant impact in non-family businesses, *CS*'s effect might not be significant.

These expectations highlight the nuanced roles of *PO* and *CS* in shaping commitment types of *AC* and *NC* within different organizational contexts, emphasizing the potential mediation role of *PO*.

Research limitations. The study's principal constraints are linked to the composition of the firm sample utilized. To enhance the robustness of the proposal, future research could consider diversifying the sample to include both large and small enterprises, assessing the stability of the results across different business sizes or, even, across different countries, which may reveal interesting scenarios. Thus, the study could be extended to incorporate a cultural dimension by distinguishing between various geographical locations, thereby evaluating the cultural influence on the research outcomes. A stimulating avenue for further investigation would involve a deeper analysis of firm categories: focusing solely on family businesses could reveal how the age of the firm and its generational makeup influence the results. In contrast, an examination of non-family firms could explore how leadership styles affect the findings.

Managerial implications. The study's proposal underscores the significant managerial implications of *PO* in facilitating organizational change. It highlights the necessity for companies to cultivate *PO* among employees to mitigate resistance and promote acceptance of change. Specifically, the study advocates for an ambidextrous organizational framework that nurtures attributes conducive to individual initiative, cooperation, multitasking, and autonomy, thereby enhancing *PO*.

This research pinpoints the critical role of managers and employees perceiving change initiatives as personally significant, essentially endorsing the notion of *PO* towards change. The intricate relationship between *PO* and organizational attitudes towards change is influenced by several factors, notably the Sense of Control and Knowledge. Employees experience increased control when their roles offer diversity, significance, autonomy, and identity, resonating with Hackman and Oldham's job characteristics theory. Conversely, bureaucratic structures and centralized information flow can diminish this sense of control and hinder *PO*.

CS emerges as vital in reducing uncertainties and fostering a sense of control, particularly in family businesses where *PO*'s role is profoundly mediating. *CS* is essential, enabling a comprehensive understanding of change objectives, processes, expected outcomes, and individual implications, thereby reinforcing *PO*.

Moreover, it could be interesting to identify which significant dimensions influence *PO*.

In essence, this study would delineate the importance of *PO* in shaping positive organizational change attitudes, suggesting that fostering *PO* through strategic organizational interventions, excellent communication, and inclusive governance can significantly enhance adaptability and manage change resistance. Transitioning towards transformational leadership and facilitating open organizational dialogues are recommended to align employee perspectives with organizational goals effectively.

Originality of the paper. Proposing a departure from existing literature (Cocieru et al., 2019), this study suggests examining the significant influence of *PO* on employees' attitudes toward change and their motivation for contributing to its success.

This research aims to explore the relationships among CS, PO, and CT within the context of family and non-family businesses in Italy, building on and potentially corroborating findings that highlight PO's critical role in enhancing CT aspects (Liu et al., 2012).

Drawing from the groundwork laid by Avey et al. (2009), this investigation seeks to contribute original insights by testing our propositions with the hypothesis that PO significantly and positively influences CT, especially in terms of AC and NC. This relationship is anticipated to be observable across different organizational forms, including both family-owned and non-family enterprises, with an expected stronger impact on NC. The study aims to be pioneering in showing how an intrinsic sense of ownership not only bolsters the perceived obligation towards change but also acts as a catalyst for organizational transformation.

Expanding on the seminal work of scholars such as Armenakis & Bedeian (1999), Beer & Nohria (2000), and Herscovitch & Meyer (2002), this research proposes to shed new light on the positive effects of CS on CT. It intends to uniquely demonstrate a significant, positive correlation between CS and the dimensions of AC and NC, with subsequent analyses exploring CS's critical role in shaping these types of commitment.

The study plans to highlight the transformative potential of well-communicated change, emphasizing the importance of a clear communication of change processes to employees to alleviate concerns and foster a culture ready for change. It aims to innovatively link effective communication during transitions to outcomes such as increased acceptance of change, reduced anxiety, and enhanced trust in leadership, offering a fresh perspective on change management discussions.

Additionally, this research has the potential to reveal a significant link between CS and PO, suggesting a meaningful interaction between these constructs rather than their independence. It proposes to investigate PO's mediating role in enhancing the relationship between CS and CT, particularly affecting AC and NC. The study will examine how transparent communication about change, coupled with a strong sense of ownership among employees over their work, optimally impacts their commitment to change, suggesting a nuanced interplay between communication, ownership, and commitment in the context of organizational change.

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Exploring the dynamics of external knowledge acquisition in family businesses: factors, constraints, and success indicators

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Abstract

This research delves into the dynamics influencing family businesses' engagement with external knowledge, aiming to shed light on the motivations, challenges, and benefits associated with seeking knowledge beyond organizational boundaries. Drawing on a single case study methodology, we provide a detailed framework that offers insights into the factors driving family entrepreneurs to explore external knowledge sources. Additionally, we uncover the primary constraints and challenges faced by family businesses in accessing and leveraging external knowledge, offering actionable insights for overcoming these hurdles. Our findings suggest that addressing these challenges head-on can enhance family firms' capacity for innovation, adaptation, and success in dynamic market environments. Furthermore, we identify specific indicators that highlight the tangible benefits derived from family businesses' interactions with external knowledge sources, emphasizing the significance of cultivating collaboration networks beyond the confines of the family firm. Overall, this study contributes to the existing literature by offering a nuanced understanding of the intricate relationship between family businesses and external knowledge, with implications for both scholarly research and managerial practice.

Key words: *Family Business; Familiness; Knowledge Management; Absorptive Capacity; Exploration; Dynamic Capabilities*

Framing of the research. *Organizational knowledge is widely recognized as a critical factor for a company's competitive advantage (Andersén, 2015), becomes even more crucial in rapidly evolving environments. In such contexts, firms can leverage organizational configurations where competitive advantage stems from the synergy between resources and competencies (Piciocchi et al., 2009). The capability to assimilate external knowledge from the business environment serves as an efficient means of swiftly acquiring new competencies (Grant, 1996; Kogut & Zander, 1992). Within this framework, the entrepreneurial mindset embraced by family decision-makers holds significant sway. They must embody an entrepreneurial inclination both at the individual and organizational levels (Oliveira & Dias, 2017). This is because family members in leadership roles face a twofold challenge: on one front, they must navigate family dynamics and business imperatives to ensure the enduring prosperity of the enterprise; simultaneously, they must possess the acumen to innovate and adapt swiftly to evolving market conditions. This necessitates a continual renewal of their skills and their integration into the company's operations, thereby enabling it to operate with enhanced agility vis-à-vis its competitors (Cohen & Levinthal, 1990). This extends past structural confines, viewing environmental dynamism as an avenue for opportunity rather than mere complexity (Saviano & Caputo, 2013).*

The company's capacity to integrate, renew, reconfigure, and transform both internal and external resources is encapsulated by the term "dynamic capabilities" (Teece, 2007; Zahra & George, 2002; Zahra et al., 2006; Eisenhardt & Martin, 2000; Teece et al., 1997). The company's ability to "identify, assimilate, and leverage knowledge from the environment" (Cohen & Levinthal, 1990) is defined as absorptive capacity (AC). This dynamic capability empowers the organization to create value by fostering innovative advantages while concurrently mitigating the impact of existing ones (Lepak et al., 2007). According to Pütz and Werner (2023), AC assumes a pivotal role for small and medium-sized enterprises (SMEs), serving as a critical tool for crafting survival strategies and effectively navigating the complexities of globalization. Zahra and George (2002) propose that the creation of competitive advantage through absorptive

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capacity comprises two key components: potential absorptive capacity and realized absorptive capacity. This process begins with the ability of "acquisition," which signifies the company's adeptness at identifying and procuring pertinent external knowledge (potential absorptive capacity). Subsequently, the process advances to the stage of "assimilation," involving the requisite processes and routines to analyze, interpret, and comprehend the newfound knowledge (potential absorptive capacity). Moving forward, the phase of "transformation" necessitates the development and enhancement of procedures to seamlessly integrate the novel external knowledge with the existing repertoire (realized absorptive capacity). Ultimately, the "exploitation" of acquired knowledge becomes pivotal in assimilating it into current operational processes, with the aim of yielding tangible business results (realized absorptive capacity).

In the academic literature on absorptive capacity within family businesses, various factors have been investigated that can positively or negatively influence the firm's ability to identify, acquire, transform, and exploit knowledge from external sources. Among these factors are the influence of the family (Brinkerink, 2018; Chirico & Salvato, 2008; Daspit et al., 2019) and the role of non-family members (Belkhouja & Daghfous, 2021; Cunningham et al., 2016; Daspit et al., 2019), entrepreneurial orientation (Chaudhary & Batra, 2018; Hernandez-Perlines, 2018; Santos et al., 2021), and the level of technological competence (Chaudhary & Batra, 2018).

A more nuanced examination has been directed towards the structure of family social capital (Pearson et al., 2008), underscoring how robust social capital can positively influence the firm's capacity to amalgamate and integrate external resources with internal ones (Andersén, 2015; Belkhouja & Daghfous, 2021; Daspit et al., 2019; Pütz et al., 2023; Zahra & George, 2002). The notion of family social capital is intrinsically linked to the concept of familiness. Following Pearson et al.'s framework (2008), familiness is delineated as the culmination of the unique interplay among the three core dimensions of social capital (structural, cognitive, and relational). Put simply, familiness emerges from the interpersonal connections and bonds among family members (structural dimension), shared perceptions, interpretations, and systems of understanding (cognitive dimension), and resources fostered through personal relationships, including trust, norms, obligations, and identity (relational dimension). Consequently, as social capital resources among family members expand, those interconnected are better equipped to effortlessly share and combine knowledge, accessing internal information more efficiently (Daspit et al., 2019). Moreover, when social capital is robust, it encourages heightened cooperation and solidarity among family members themselves, fostering enhanced internal cohesion and mutual support (Daspit et al., 2019). Conversely, it has been observed that the same familiness may detrimentally affect the firm's capacity to identify external knowledge (Andersén, 2015; Daspit et al., 2019; Pütz et al., 2023; Zahra & George, 2002).

From this perspective, while high social capital facilitates significant internal knowledge sharing, it may also cultivate a closed mindset. This occurs because familial bonds can create resistance to seeking and embracing external ideas or knowledge. Consequently, familiness can be both a strength and a weakness for a company (Andersén, 2015). Companies with a high level of familiness may encounter difficulties in identifying and comprehending knowledge from external sources, potentially delaying the identification and adoption of new technologies compared to those with weaker familiness (Arregle et al., 2007; Carney, 2005; Daspit et al., 2019; König et al., 2013). Employing March's terminology (1991), familiness is likely positively associated with exploitation capability but inversely correlated with exploration capability (Andersén, 2015). However, assessing familiness as a positive or negative factor depends on the specifics of the industry and the business environment. In stable contexts, prioritizing internal efficiency is crucial, whereas in more unstable environments, continuous acquisition and integration of new knowledge become essential for the company's success (Zahra & George, 2002).

To fully understand familiness and identify the numerous factors influencing the knowledge management capabilities of family businesses, it's essential to expand the scope beyond just family social capital. As Sharma (2008) suggests, by integrating the research of Pearson et al. (2008) and Arregle et al. (2007), the close interconnectedness between family and business systems opens up avenues for potential appropriability that go beyond social capital flows to include other forms of capital. In this context, it's crucial to consider not only social capital but also human capital, which encompasses the knowledge, technical expertise, emotional resilience, and intellectual capital of both family and non-family members (Puhakka, 2002); financial capital, especially in terms of long-term investments; and physical capital, which includes the company's infrastructure, equipment, and tangible assets (Sirmon & Hitt, 2003). Embracing this perspective, familiness can be defined as the integration of social, human, financial, and physical capital resources within a firm, resulting from interactions between the family and business systems (Habbershon & Williams, 1999; Habbershon et al., 2003). To understand changes in familiness, it's crucial to monitor how resources available to the family and business systems evolve in response to the flow of capital between the two systems (Sharma, 2008).

According to Jansen et al. (2005) and Andersén (2015), in family businesses, their inherent tendency to be less externally oriented may lead firms with high levels of familiness to have a diminished capacity to identify and comprehend external knowledge (potential absorptive capacity). However, once assimilated, familiness could enhance the effective utilization of such knowledge (realized absorptive capacity) through specific mechanisms of social integration within the family and the presence of strong family social capital (Pütz & Werner, 2023).

Considering that potential absorptive capacity (AC) and realized absorptive capacity operate sequentially and directly influence innovation processes in family businesses (Aloulou, 2024; Ali & Park, 2016; Cepeda-Carrion et al., 2023; Chaudhary et al., 2021), these companies should maintain an open mindset and consistently update their knowledge, aligning it with emerging market trends and technologies. This is essential to prevent their knowledge base from becoming outdated and to ensure it can be effectively and profitably leveraged (Andersén, 2015; Filippini et al., 2012; Wang, 2016). Therefore, the proper implementation of AC enables family businesses to adapt promptly and flexibly to changing environmental conditions, such as shifts in industry structures, the introduction of new technologies, and

corporate crises (Boyd & Hollensen, 2012; Eisenhardt & Martin, 2000; Zahra & George, 2002). Scholars should consider the holistic effects of AC, particularly regarding the interplay between potential and realized AC, as it represents a crucial resource for companies in addressing challenges posed by continually evolving environmental changes (Eisenhardt & Martin, 2000; Pütz & Werner, 2023). Underexplored are the factors influencing the willingness and motivation of family entrepreneurs to seek external knowledge, even within environments rich in familiness. Kotler et al. (2020), aligning with existing literature, argue that the emotional attachment of family owners to the business often leads them to undervalue the significance of external knowledge, thereby diminishing the firm's inclination to acquire and integrate new knowledge beyond its established realms.

The emerging insights underscore the critical importance of comprehending the cognitive processes guiding decision-makers' actions. Despite the evolving landscape, decision-makers often adhere to traditional patterns, criteria, and techniques rooted in an outdated perception of linearity within entrepreneurial systems (Calabrese, 2014), particularly evident in contexts marked by strong value categories (e.g., business families with a pronounced sense of familiness). This highlights the imperative for an interpretative framework to aid decision-makers in navigating complex contexts, facilitating the interpretation of phenomena and variables inherent to such environments, thus enhancing the decision-making process (Barile, 2008; Calabrese et al., 2024).

Purpose of the paper. The aim of this research is to deepen the understanding of the dynamics influencing the capability of family businesses to identify and acquire external knowledge. Family businesses, often characterized by a common language and shared experiences (Katz & Kahn, 1978), may tend to favor the use of their internal resources for knowledge management (Daspit et al., 2019; Pearson et al., 2008). However, there are circumstances in which these businesses turn to external sources to acquire new knowledge. These activation triggers can be manifold, including corporate crises, new corporate strategies, rapidly evolving environmental conditions, technological changes, or competitive pressures (Duchek, 2013; Zahra & George, 2002).

Academic research on family businesses and absorptive capacity suggests a strong link between the characteristics of family ownership and the use of external knowledge; however, there is still little clarity on the socio-emotional mechanisms driving this effect (Kotlar, 2020; Pütz & Werner, 2023). During the perception process, the acceptance or rejection of new information is influenced by value categories, which determine the extent of variation in the diversity of knowledge possessed as a result of information reception (Barile & Calabrese, 2011).

The goal is therefore to identify the factors that drive family entrepreneurs to seek knowledge beyond company boundaries. This approach aims to understand the crucial role of the family entrepreneur in directing the company outward and fostering openness to new sources of knowledge.

QR1 = What are the factors driving family entrepreneurs to seek knowledge beyond company boundaries, and how do they influence the company's outward orientation?

Furthermore, the aim is to investigate the constraints and challenges encountered by family entrepreneurs in their attempt to access external knowledge. Among these factors are, for example, safeguarding independence from external agents (Donkels & Fröhlich, 1991) and preserving the socio-emotional heritage of the organization (Gomez-Mejia et al., 2007). Understanding such obstacles and difficulties is crucial for formulating effective strategies that enable family entrepreneurs to overcome them and fully leverage the opportunities offered by external knowledge.

QR2 = What are the main constraints and challenges that family entrepreneurs face in the process of exploring external knowledge?

Lastly, it is common for senior family members and older employees to hinder the use of knowledge, displaying distrust towards changes and little interest in new knowledge (Eniola, 2023). Consequently, it becomes essential to identify specific indicators that highlight the benefits of interacting with external knowledge sources. These indicators not only provide a tangible measure of the effectiveness of external knowledge acquisition strategies but also help overcome the family entrepreneur's resistance to external openness, offering concrete evidence of the importance and advantages of engaging with external knowledge sources for the long-term success of the family business, thus facilitating the creation of solid and advantageous collaboration networks for the company.

QR3 = What are the specific indicators that can highlight the benefits derived from the interaction of family businesses with external knowledge sources?

Methodology. Addressing the research gaps identified in the context of decision-making processes within family-run businesses, often influenced by specific cultural models and values, this study aims to propose hypotheses to fill these gaps. The objective is to correlate the effective contributions of process and knowledge management with company performance metrics, such as economic-financial sustainability and operational efficiency. To achieve this goal, the study focuses on a specific case of a company (single case research), intending to investigate a practitioner enterprise and the dynamics it experiences in managing "familiness" and its impact on governance and management methods. The core of the analysis is focused on the factors guiding the transition from adopting family procedures (first-level change) to integrating external knowledge (second-level change). This study holds crucial importance in fully understanding the complexity of this transition, which marks a critical shift from maintaining established practices to the ability to assimilate new knowledge. In other words, the investigation explores how the company under study, first and foremost, recognized the need to open up to external sources, and secondly, utilized external knowledge to increase efficiency and improve performance through the implementation of process and knowledge management techniques, while mitigating potential constraints associated with the familial nature of entrepreneurship.

External knowledge refers to the various knowledge beyond the expertises and traditional practices of the family entrepreneur. Considering this focus, the external knowledge are connected both external professionals and specialized employees, in order to their contribution to improve the overall knowledge of the company, generating, by this way, the conditions to improve performances.

The methodology is structured into several phases:

- *Case study selection:* A representative company undergoing generational transition and demonstrating interest in implementing new management techniques to enhance its performance has been chosen.
- *Data collection:* Information is gathered through interviews with the CEO and functional managers, focusing on the role of external knowledge in implementing process and knowledge management techniques.
- *Data analysis:* The collected information will be analyzed to understand the governance and management methods used by the company, the level of formalization of the organizational structure, and the economic-financial and operational performance indicators. Additionally, the analysis will include examination of the generational transition, process explicitation, and implementation of knowledge management strategies.
- *Performance evaluation:* Performance indicators will be identified and examined before and after the implementation of the new process and knowledge management techniques to assess their overall impact on the company.
- *External context:* External factors such as economic and regulatory context that could influence company performance will be taken into account, ensuring a comprehensive and accurate evaluation.

Through this methodology, our objective is to underscore the significance of external knowledge acquisition in deploying process and knowledge management methodologies within the familial business milieu. The ultimate objective is to elucidate how the transition from tacit to explicit knowledge, facilitated by external knowledge utilization, may enhance the overall performance of the company within the framework of familiness.

Results. The anticipated outcomes of this ongoing research endeavor aim to significantly contribute to the existing literature on family businesses and their engagement with external knowledge, particularly in the realm of absorptive capacity. By offering a comprehensive framework of the dynamics shaping family firms' absorptive capacity, this study adds depth to our understanding of how these organizations navigate the knowledge landscape. Specifically, the identification of key drivers propelling family entrepreneurs to seek knowledge beyond their organizational boundaries provides novel insights into the motivations behind knowledge acquisition strategies in family businesses. Understanding these drivers can help shed light on the strategic decisions made by family firms regarding their engagement with external sources of knowledge. Moreover, by uncovering the primary constraints and challenges faced by family entrepreneurs in accessing and exploring external knowledge, this research offers actionable insights for overcoming these hurdles, thereby enhancing family firms' capacity for innovation, adaptation, and success in dynamic market environments. This nuanced understanding not only enriches theoretical perspectives on absorptive capacity but also provides practical implications for family business practitioners seeking to leverage external knowledge effectively.

Research limitations. Using a single case study as a research method presents some intrinsic limitations that need to be considered. Firstly, the generalizability of the results could be compromised since the data and conclusions are based on a single organization. This means that the findings may not be representative of other family businesses with different contexts and characteristics. Additionally, the risk of subjective interpretation is increased as the results largely depend on the researcher's interpretation and analysis. Moreover, the lack of diversity in the sample may limit the variety of perspectives and experiences considered in the case study. Lastly, since a single case study provides a limited overview of a single business reality, there could be other unidentified or unconsidered influential variables or factors that may affect the results in unforeseen ways.

Managerial implications. This research contributes valuable practical insights by shedding light on the primary constraints and challenges encountered by family entrepreneurs as they navigate the realm of accessing and leveraging external knowledge. The examination of the factors motivating entrepreneurs to pursue external knowledge (QR1) facilitates the refinement of models that are more precise and anticipatory in nature. Furthermore, this study delves into the socio-emotional mechanisms guiding firms as they transition from reliance on familial routines (representing a first-level change) to embracing external knowledge (representing a second-level change), thus furnishing practical insights directly applicable to family entrepreneurs. Such an approach enables the formulation of tailored strategies that foster consonance among the family system, the business framework, and the external milieu.

Through a meticulous identification and analysis of the principal constraints and hurdles confronted by family entrepreneurs in their quest for external knowledge exploration (QR2), pragmatic recommendations can be derived to surmount these challenges and enhance the efficacy of endeavors aimed at acquiring external knowledge within family enterprises. Additionally, the discernment of specific indicators elucidating the benefits derived from family businesses' engagements with external knowledge sources (QR3) not only serves to substantiate the tangible advantages accrued from such interactions but also underscores the significance of nurturing collaborative networks that transcend the confines of the familial enterprise. This equips family entrepreneurs with a demonstrative instrument emphasizing the imperative of adopting an open and innovative approach to managing external knowledge.

By directly confronting these challenges, family businesses can bolster their capacity for innovation, adaptation, and prosperity within dynamic market environments, thereby attenuating resistance to change that may manifest within the organization, particularly amidst the backdrop of familial dynamics and traditions. These findings furnish practical guidance for business decision-makers and constitute a notable contribution to the scholarly discourse, furnishing a more comprehensive perspective that encompasses both the cognitive processes of business decision-makers and the interplay between the firm and its suprasystems.

Originality of the paper. *The originality of this paper lies in its comprehensive exploration of the dynamics influencing family businesses' engagement with external knowledge. While previous studies have touched upon aspects of absorptive capacity and knowledge management in family firms, this research offers a deeper examination of the motivations, challenges, and benefits associated with seeking knowledge outside organizational boundaries. By integrating theoretical perspectives with empirical evidence from a single case study, this study provides a nuanced understanding of how family entrepreneurs navigate the knowledge landscape and the implications for firm performance and long-term success. Furthermore, the identification of specific indicators highlighting the benefits of external knowledge interactions adds novel insights to the literature, contributing to a more holistic understanding of the role of external knowledge in family business strategies. Overall, the paper's originality lies in its comprehensive approach to exploring the complexities of family businesses' engagement with external knowledge and its implications for organizational success.*

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Tradition in Transition: Exploring Organizational Dynamics and Strategies in Small Hotels

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Abstract

In the evolving hospitality industry, small hotels confront challenges amidst digitalization, sustainability, and shifting tourist behaviors. This paper examines organizational dynamics in Bellaria - Igea Marina, an Italian seaside destination. Employing historical insights and organizational analysis, it explores strategies used by small hotels. A survey of 140 managers, complemented by interviews, reveals a blend of tradition and innovation. Family ownership, local entrepreneurship, and strategic adaptation are prominent. Despite hurdles like generational transitions, small hotels exhibit resilience, offering insights for sustained competitiveness. This study contributes to hospitality management literature, illuminating the interplay between tradition and innovation and proposing strategies for addressing organizational challenges.

Key words: Hospitality industry, small hotels, organizational dynamics, local entrepreneurship, strategic adaptation.

Framing of the research. *The competitive environment of the hospitality industry is impacted by profound social, economic, and technological transformations, suffice it to mention in particular:*

- *Digitization: the increasing use of digital technology affects how hotels handle reservations, manage performance, promote their services, and interact with customers.*
- *Sustainability: there is a growing focus on sustainability (declined in its environmental, social, and economic dimensions), with many hotels adopting eco-friendly practices to meet customer expectations.*
- *Changes in tourist behavior: tourists are increasingly seeking customized and unique experiences; they want to be involved in designing the services they will use.*
- *Changes in business models: the development of the sharing economy is changing the competitive dynamics of the hospitality industry with the emergence of competition from services such as Airbnb.*
- *Socio-demographic changes: tourists' preferences are changing with social and demographic changes, for example, with the increase in the number of trips and the simultaneous reduction in their duration.*

In this situation, there is an increasingly pressing need for hotels to innovate. This innovation is not limited to services rendered but extends to organizational configurations, labor division choices, and people selection and management processes (Baum, 2006; 2015; Chiang, 2010; Gomezelj, 2016; Martín-Rios, Ciobanu, 2019; Shin, Perdue, 2022).

If large hotels and international chains ride and direct innovation processes, the reaction of smaller hotels is more complex to decrypt: the poor managerial skills of executives, the anchoring to traditions, and the constraints imposed by the limited resources available seem to preclude their ability to adapt and ultimately survive (Morrison, 2002; Morrison, Conway, 2007).

On the other hand, although the fate of small hotels seems sealed, they still are the backbone of most hospitality systems, particularly in Europe (Lee-Ross, Lashley, 2010); also, most of them are family-owned and usually are run directly by the owner or his/her family (Getz et al. 2004), thus contributing to the economic development of local communities.

It also seems evident how, beyond hypothetical best practices related to the implementation of innovations, different organizational solutions and management methods still coexist and succeed simultaneously. Tradition and innovation in hotel management do not seem to be opposite poles of a continuum of organizational solutions but intersect and allow a wide range of choices and trajectories of change (Bagnaresi et al., 2021).

Purpose of the paper. *This paper investigates the dynamics of organizational change in small hotels, focusing on the City of Bellaria - Igea Marina. In a context in which the hospitality industry is exposed to multiple pressures, including*

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digitization, sustainability, changing tourist behaviors, and new business models, the paper aims to understand how small-sized hotels address these challenges.

Through an interdisciplinary approach combining historical and organizational methods (Bagnaresi et al., 2018; Decker et al., 2015; Kieser, 1994; Kipping, Üsdiken, 2014; Maggi, 2003), the full paper will provide an overview of current organizational choices and will outline evolutionary trajectories for small hotels in Bellaria - Igea Marina, thus contributing to the literature on hospitality management and to local planning policies.

Methodology. Situated along the Adriatic coast, the Municipality of Bellaria - Igea Marina is located in the southeastern part of the Emilia-Romagna Region. Today, the city has a population of 19,408 and is among the best-known national seaside tourism destinations. The tourism sector is the driving force of the local economy. This is made possible thanks to the unmatched presence of hotels in the area. Along its city coastline, which stretches for about 7 kilometers, there are currently 299 hotels (Istat, 2023) with almost 20,000 beds. This is also confirmed by the Annual report on tourism and hotel accommodations periodically compiled by the Region. In it, 2,053,300 overnight stays are recorded for the year 2023: a value that is up from the last two years (1,780,397 in 2021) and that is close to that surveyed before the COVID-19 (2,216,032 in 2019). The 2023 data confirm how Bellaria - Igea Marina emerges as the third destination in the province after Rimini (6,540,397) and Riccione (3,279,881) and how the same position is demonstrated in terms of the number of arrivals: 384,674 compared to Rimini's 1,751,391 and Riccione's 833,637. When compared with the population density and the area of the territory (18.17 km) of the Municipality of Bellaria-Igea Marina, the numbers reported appear even more impressive.

Such a positioning is the result of a centuries-old history and legacy. The city's tourism growth and the evolution of its hospitality industry developed in parallel with the other seaside resorts of the Riviera Romagnola (Battilani, Fauri, 2009). Before the development of this industry, the local economic vocation was, for centuries, agriculture and fishing. With the arrival of the first vacationers in the nearby city of Rimini, Bellaria - Igea Marina also began to gear up for hospitality. Fostering the birth of a primordial tourism industry is the 1885 inauguration of the railway station (which made the city accessible) and the subsequent development of the first urban master plan. The first private villas sprang up along the shoreline, and in 1913, the first hotel was opened. Ten years later, a travel guide listed four more guesthouses (Becca, 1923). They all promoted themselves for their "affordable prices" and for being ideal "for families".

This approach (based on family management, the provision of essential services, and low prices) would characterize the basis of the success of the entire Romagna coastline when the late 1950s and early 1960s saw the explosion of mass tourism in Italy. In the case of Bellaria - Igea Marina, it is sufficient to highlight the number of hotels surveyed by the Internal Statistical Yearbook of Commerce and Tourism for 1963 (347) and how it gradually increased until it reached 450 in 1974. Censuses conducted at the time testify how these hotels were solely seasonal and, in the vast majority, small (more than two-thirds were listed as Category III - boarding houses). Not unlike neighboring tourism destinations, an important phenomenon that comes into being is that of tourist loyalty. A survey conducted by the Region in 1978 indicates that 67.4 percent of the tourists interviewed had already stayed in Bellaria - Igea Marina in the past and that the two most appreciated features were the low prices (25.7 percent) and the friendliness of the residents (23.9 percent).

A change in the structure of the hospitality industry emerged between the 1980s and 1990s. It was due to several factors, such as competition with new domestic and international destinations and generational change.

The change has involved the renovation of buildings, focusing on specific target customers (mainly families with children), and developing specific high-value-added services for the identified target. These interventions have allowed Bellaria-Igea Marina to consolidate its competitive position and demonstrate high resilience to the formidable challenges posed by COVID-19.

In 2020, the Municipality of Bellaria - Igea Marina established the BIM2040 Strategic Plan, i.e., a participatory and open local planning initiative to define the city's identity for 2040.

BIM2040 works on several fundamental and interconnected dimensions: education, culture, sustainability, urban planning, social progress and inclusion, and economic development. Local institutions, research and educational institutions (in particular, the Center for Advanced Studies in Tourism of the University of Bologna), local economic categories, and residents contribute to the Strategic Plan.

In the context of the meetings and events held in 2021 on the topic of the local economy and its prospects, the understanding of the characteristics and dynamics of the hospitality industry, the main driver of the city's economic fabric, gained particular importance.

It was therefore decided to deepen the investigation on this topic and, during 2022, several meetings were held to understand what, according to tourism entrepreneurs and residents, were the main strengths, critical issues and opportunities of the local hospitality industry.

At the end of 2022, a focus group was established to prepare a questionnaire investigating the organizational and managerial characteristics of hotels in Bellaria - Igea Marina. It has been composed of experts from the BIM204 management team, the Municipality of Bellaria - Igea Marina, researchers from the Center for Advanced Studies in Tourism of the University of Bologna, and representatives of the leading local hotel manager associations (Federalberghi and Confcommercio).

The focus group prepared, tested, and validated a survey based on an online questionnaire to be submitted to all hotel managers in Bellaria - Igea Marina.

The questionnaire consisted of thirty-two closed-ended questions organized into four sections:

1. The hotel (name, foundation year, category, size, seasonality, ownership structure, legal form);
2. The hotel manager (age, place of birth, education, professional experience, family);

3. *The organizational and managerial choices (competitive strategy, target customers, decision-making processes, division of labor, authority and hierarchy, human resource management);*
4. *The future (generational transition, hotel prospects in the medium and long term).*

The link to the questionnaire was sent, along with a cover letter, by BIM2040 to the managers of the 299 hotels on February 28, 2023. The survey was closed in early April 2023.

A total of 140 valid questionnaires were filled out. The response rate was very high (47 percent of the population) and reflects the demographics of local hotels. The survey results were presented and discussed in the focus group and presented in several meetings to the heads of local hotelier trade associations. These meetings enabled a richer interpretation of the emerging evidence and the identification of some critical elements.

In December 2023, a public event was organized to expose relevant findings and issues to local hotel managers and policymakers. The event was attended by about 100 people, including the mayor and city council, business owners, residents, and about 70 hotel managers. At the end of the presentation, a participatory analysis of the results and an open discussion aimed at gathering feedback and alternative interpretations was initiated. The discussion highlighted the most critical issues, with particular reference to the sustainability of the industrial structure over time, generational transition in hotel management, and the possible tension between tradition and innovation.

Based on these insights, ten hotel managers were selected from the 140 respondents and invited for in-depth interviews (the interviewees have been selected to reflect different hotel categories and sizes and different generations of managers).

The semi-structured interviews are focused on the history of the hotel and the family, with particular emphasis on the issues of generational shift and organizational change. The ten interviews, which are currently being conducted, will be transcribed and analyzed through a thematic analysis (Guest et al., 2012).

Results. *Below, we present the main findings emerging from the survey. In the full paper, these results will be integrated and supplemented by the results of the interviews. The data emerging from the survey show peculiar characteristics.*

The average hotel size is 17 rooms for one-star hotels, 21.6 rooms for two-star hotels, 41.1 rooms for three-star hotels, and 48 rooms for four-star hotels. 99% of the hotels are open only in summer.

Regarding ownership structure, 94% of the hotels are owned by the manager (who therefore qualifies as owner-manager). In addition, 24% of respondents own more than one hotel.

The first hotels were founded in the period between the two world wars (12 hotels established between the 1920s and 1940s). After World War II, most hotels were founded (42 in the period 1950-1959, 58 in the period 1960-1969). In the following ten years (1970-1979), 22 hotels were founded. Only one hotel was founded between 1990 and 2023.

Interestingly, 10 of the 12 hotels founded before World War II are still run by the same founding families (with several generational transitions occurring over time). More dynamism concerned the management of hotels founded in the 20 years after World War II: only 58 out of 110 are still run by the founding families. The change in the management structure of these hotels was one element of dynamism that marks the 1980-2023 period.

As for hotel managers, most of them (96 out of 140) were born in the period 1960-1969 (48) or in the period 1970-1979 (48). 24 hoteliers were born before 1960, and only 20 after 1980.

33 hotel managers have been running the hotel for over 30 years, 49 for less than 15 years.

21% of hoteliers have a laurea degree, 71% have a high school degree.

Interestingly, 85% of hotel managers were born around Bellaria - Igea Marina. This percentage reaches 90% when considering those born in the Emilia-Romagna region. It is, therefore, an extremely local entrepreneurship, immersed in the city's identity, embedded in deep and long-lasting social networks. Moreover, in 94 percent of the hotels, at least one member of the manager's family is involved in hotel management.

Regarding strategic choices, 49% of hoteliers believe that customers choose their hotel because they are fond of them or their family, 36% believe that customers are mainly attracted by the high quality of services offered at the hotel. Finally, 15% believe that customers are primarily attracted by the low prices charged at the hotel.

These responses tend to be consistent with the competitive strategies stated by managers: 74% of them say they pursue a strategy of innovation and differentiation, while 16% pursue cost leadership.

Concerning decision-making processes, 37% of managers say they make decisions analytically, including using advanced management systems; 34% say they rely on their experience, and 29% make decisions by following market trends. Ultimately, most managers make decisions based on only minimally objective perceptions, assumptions, and trends.

As for people management styles, 74% direct people by imposing standardized rules and procedures, 14% by continuously issuing directives and orders, and only 13% say they stimulate employees to make decisions and exercise discretion. In 47% of the hotels, employees work exclusively within one Service; in 4% of the hotels, employees rotate continuously between departments; finally, in 49% of the hotels, employees are framed in one Service and occasionally are seconded to other departments.

Recruitment of new employees is mainly done directly and individually; references and suggestions from current employees are also important. Marginal is the use of agencies, trade associations, and training institutions. As for the skills sought in employees, 51 percent of managers say they are mainly looking for experience and skills, 23 percent are looking for hard-working people, and 16 percent are looking for employees with character predispositions.

Finally, about the future of family management, 79% of hotel managers say they would like to pass management to their descendants, while 21% would not want to do so at all. 59% of respondents realistically (beyond their wishes) believe that after themselves, management will pass to their descendants, 21% plan to sell the hotel, 11% plan to rent it out, 6% plan to separate ownership and management, and 2% plan to close the hotel.

Research limitations. The results of this investigation are based on a single tourism destination, they are indeed in need of additional comparisons. Finally, longitudinal analysis relying on a sample surveyed in different moments of time would be very important to improve our understanding of dynamic processes.

Managerial implications. Results from the survey and interviews will be used to identify the management and organizational type each hotel tends to. Indeed, beyond any difference in size and category, hotels tending toward the same ideal type show similar approaches to the business and adopt similar organizational solutions (Bagnaresi et al., 2018). The information from the interviews will also allow the trajectories of change among the various types of hotels to be represented. In this way, in the full paper we will be able to propose answers to the most critical issues and organizational challenges that characterize small hotels in Bellaria - Igea Marina, specifically:

- The current structure of the hotel industry has ensured the success of the city for sixty years. Can it continue to sustain its competitiveness for the next twenty years?
- The continuity in the management of more than a quarter of hotels appears to be at risk. Does the entry of “alien” management represent an opportunity or a threat?
- Can tradition and innovation coexist in hotel management?
- How to foster generational transition in hotel management?

Originality of the paper. This paper contributes to the literature on hospitality management by offering a nuanced exploration of the organizational dynamics within small hotels, particularly in the context of Bellaria - Igea Marina. Unlike previous studies that often dichotomize tradition and innovation as opposing forces, this research unveils their symbiotic relationship within small hotel operations. By delving into the historical evolution of hospitality in the region and examining contemporary managerial practices, this study uncovers how small hotels effectively blend tradition with innovative strategies to navigate the multifaceted challenges of the modern hospitality landscape. This integrative approach sheds light on the unique organizational configurations, management styles, and strategic orientations prevalent among small hotels, providing fresh insights into their adaptive capacity and resilience in the face of dynamic market forces.

Furthermore, this paper offers a methodological contribution through its interdisciplinary approach, combining historical analysis with organizational methods to provide a comprehensive understanding of small hotel dynamics. By triangulating survey data with in-depth interviews, the study captures a rich tapestry of managerial practices, strategic choices, and organizational structures within the hospitality sector of Bellaria - Igea Marina. This holistic methodological framework not only enriches our understanding of small hotel management but also serves as a model for future research endeavors seeking to unravel the complex interplay between tradition, innovation, and organizational change in other tourism destinations. Through its original approach and empirical insights, this paper advances scholarly discourse on hospitality management and offers practical implications for policymakers, industry stakeholders, and local communities striving to foster sustainable development in tourism economies.

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Whispers of Ambition: Unpacking Emotions in Entrepreneurial Orientation of Women-Led Family Businesses

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Abstract

This study aims to explore the nuances of EO within the context of women-led family firms through a multi-case analysis of 7 women-led family firms. Findings extend previous studies by emphasizing the influence of emotional aspects, particularly uncovering the heavy role of guilt and shame that act as two ambidextrous emotions, by delineating different women-led family firms' EOs.

Key words *women-led family firms, women entrepreneurship, entrepreneurial orientation, multiple embeddedness.*

Framing of the research. *Entrepreneurial orientation (EO) encompasses the inclination to undertake entrepreneurial initiatives by leveraging innovativeness, proactiveness, and risk-taking (Miller, 1983). This inclination extends to family businesses, recognized as crucial contributors to global economic growth and wealth (Kellermanns et al., 2008; de Groot et al., 2023). Family businesses, owned and overseen by the founding family, embody family beliefs and values, aiming to pass on the business across generations (Aronoff & Ward, 2011). Given the challenging business environment, engaging in entrepreneurial initiatives becomes crucial for the long-term survival of family businesses, leading to a surge in scholarly attention towards EO (Hernández-Linares & López-Fernández, 2018). However, despite extensive research on EO in family firms, there is a dearth of research on EO in women-led family firms (Sherlock et al., 2023), probably due to the prevailing focus on heroic male founding owners, which reinforces stereotypical notions (Braun et al., 2017). While recent progress acknowledges women as active contributors to family firms (Cruz et al., 2019; Nehili et al., 2018), challenging the historical perception of them as invisible or "Chief Emotional Officers" (Lyman, 1988), there is a surprising lack of studies specifically examining EO in women-led family firms (Madison et al., 2021; Bang et al., 2023; Fuentes-Fuentes et al., 2015; Gundry et al., 2014; Gupta & Levenburg, 2013; Kickul et al., 2010)), in contrast to the increasing studies on women entrepreneurship, urging further investigation to "capture more and richer aspects" (Ahl, 2006, p. 610).*

This paper seeks to fill this critical gap in the literature by exploring the unique nuances of EO within the context of women-led family firms. These firms represent an illuminating setting for investigating EO dynamics, specifically focusing on emotions. Family businesses, in fact, renowned for their robust emotional ties and moral attachment (Jaskiewicz & Dyer, 2017; De Massis & Foss, 2018), are increasingly recognized in recent research as arenas where emotions significantly, if not entirely, impact strategic decision-making (De Massis, Chua, & Chrisman, 2008; Humprey et al., 2021; Picone et al., 2021). Thus, this study aims to unravel how emotions shape the EO of women-led family firms through the lens of the multilevel embeddedness perspective (Aldrich et al., 2023; Wigren-Kristoferson et al., 2022). This perspective provides a deeper understanding of how women are seen within a complex structure, including individual roles, family interactions, and business environments. These elements contribute to their burden of emotions and the consequent acquisition of values, standards, and role anticipations, which can influence their attitudes, abilities, and actions, particularly on a personal level (Khanin, 2013; Khanin et al., 2012). In other words, factors such as motherhood, family care, and challenging social norms can evoke positive and negative emotions that serve as building blocks of their individual EO, shaping a unique firm's EO. In this sense, emotions can be considered as parts of the entrepreneurial process, influencing opportunity recognition, decision-making, and venture performance (Foo, 2011).

Purpose of the paper. *In light of the previous assumptions, this study aims to answer the following research questions: a. How do emotions shape (or affect) the entrepreneurial orientation of women leading family firms? b. How does this influence impact the overall entrepreneurial orientation of women-led family firms? To answer the research*

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question, the study is based on a multi-case analysis of 7 women-led family firms.

Methodology. Due to the under-investigated topic, this study employs a qualitative methodology with an inductive and interpretive approach, utilizing a multi-case study (Eisenhardt & Graebner, 2007; Karra et al., 2006; Yin, 2008). This approach facilitates an in-depth investigation of a contemporary phenomenon within its authentic real-life context (Koporcic et al., 2019; Pettigrew, 2014; Yin, 2008). Qualitative research design holds relevance in the field of organization and management studies because it allows for "understanding the dynamics present within single settings" (Eisenhardt, 1989, p. 533). Moreover, it is especially fitting for family business studies, aiding in penetrating the veil of family dynamics and avoiding collecting irrelevant data (De Massis & Kotlar, 2014; Litz, 1997).

The multi-case study design emerges as a well-suited methodology as it addresses situations with manifold variables embedded in the investigative context and relies on multiple sources of evidence, converging in a triangulation fashion (Yin, 2013). Moreover, the multi-case approach is a fitting theory-building method deeply rooted in empirical data. Gathering information through interviews and combining it with factual data enables the production of accurate, interesting, and testable theories (Eisenhardt & Graebner, 2007).

We selected women entrepreneurs based on articles in the press, seminars, and personal contacts. We also found interesting cases by means of the snowball effect, asking women interviewed to suggest to us other women leading a family business. We reached the saturation point (Suddaby, 2006), establishing seven cases (see Table 1) that sounded rich in information and adequate, also under the suggestions of Eisenhardt (1989). Information-rich cases provide substantial insights into issues central to the research's purpose.

Table 1 - Sample characteristics

FIRM CHARACTERISTICS				WOMEN CHARACTERISTICS					Length of interviews (in minutes)
#	Firm activity	Foundation	Generation	Age	Education level	Marital status	Child.	Year of entrance in ownership and/or managerial roles	
1	Agriculture and farming	1970	3	44	Bachelor Degree	Married	2	2021	42.31 - 40.00
2	Artisanship	1990	2	48	Master Degree	Divorced	1	2014	41.02 - 39.30
3	Tourism	1950	3	42	Master Degree	Married	2	2019	38.17 - 42,15
4	Industry	1970	3	50	Bachelor Degree	Divorced	3	2013	39.30 - 35,30
5	Tourism	1994	2	52	Bachelor Degree	Married	2	2000	38.59 - 42.00
6	Agriculture and farming	1934	6	48	Master Degree	Single	1	2012	43.45 - 40.00
7	Industry	1978	3	46	Master Degree	Married	3	2001	40.00 - 38.40

Data Gathering. This research employed a combination of primary and secondary data sources. For primary data collection, we conducted comprehensive semi-structured interviews both in-person and via Teams, adhering to a two-part interview protocol (Legard et al., 2003). Throughout 2023, we conducted 14 semi-structured interviews with seven women entrepreneurs managing their family firms, each lasting approximately 40 minutes. The initial part of the interviews focused on obtaining demographic information and understanding the firm's history. The subsequent part delved into exploring the influence of emotions on individual women entrepreneurs' Entrepreneurial Orientation (EO) and its reflection on the entrepreneurial orientation of family firms. Specifically, the interviews scrutinized emotions from three levels of analysis - individual, family, and firm. Conducted in Italian, the interviews were audio-recorded, translated into English, and transcribed verbatim by the authors, following the interviewees' prior authorization through signed informed consent forms. The interview questions were crafted to encourage open discussions about the interviewees' experiences and personal perspectives, avoiding the use of technical terms from academic literature.

Secondary data included personal documents, archives, newspaper articles, website content, and social media materials. This data elucidated interview content and enhanced our understanding of innovation proclivity, proactiveness, and risk-taking in instances where interviews were insufficient.

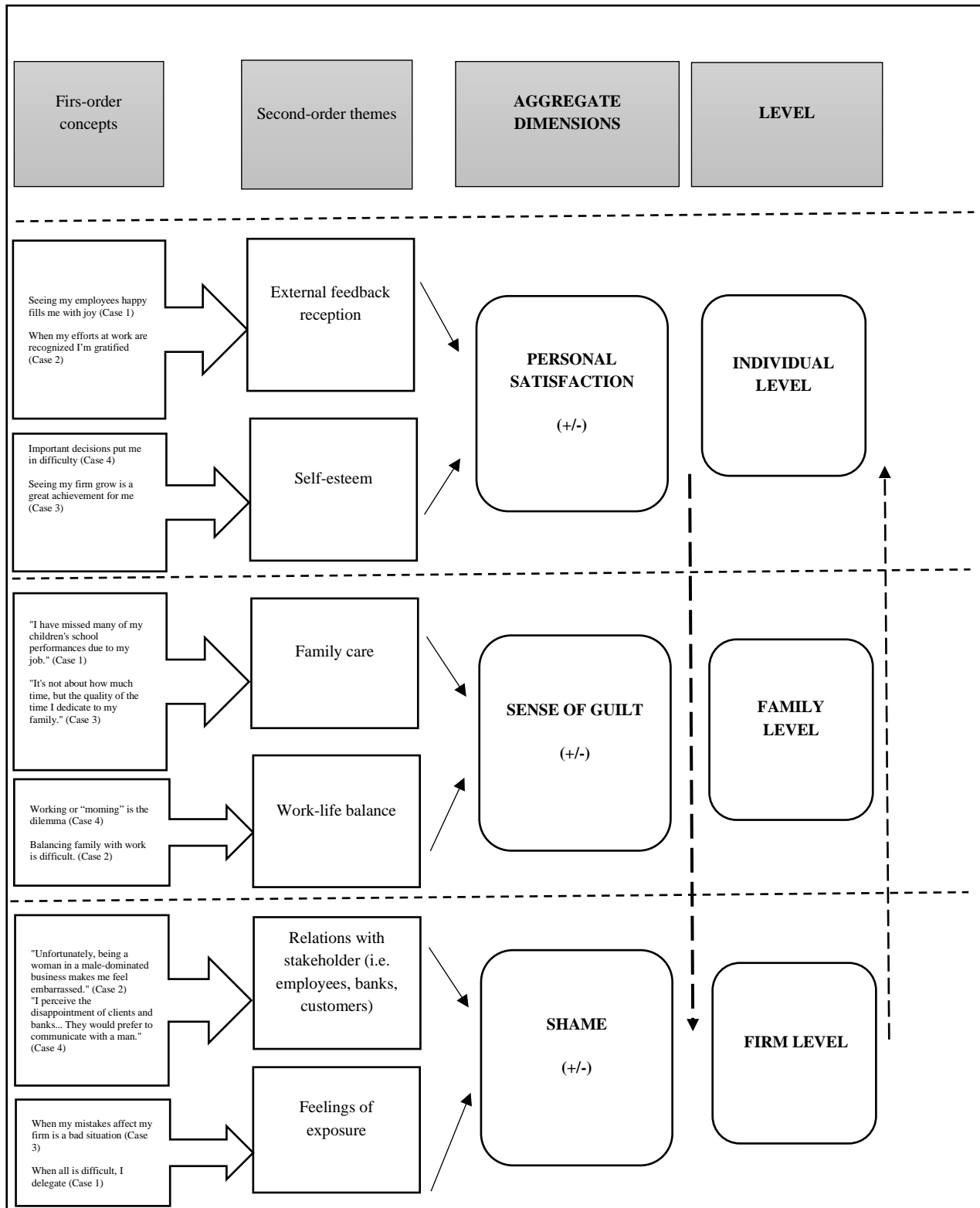
Data Analysis. Following the completion of interview transcriptions, three independent coders engaged in a thorough review, scanning for emergent themes crucial for addressing the research question (Reay & Zhang, 2014). To ensure the integrity of our analysis, we chose a content analysis approach without using software like NVivo to avoid potential biases in Cohen's kappa (Kim et al., 2016). Cohen's kappa, designed for character-level reliability assessment, proved unsuitable for our study, which operated at a higher unit of analysis (e.g., sentence and paragraph). Our content analysis method combined the nomothetic approach advocated by Eisenhardt (1989) with the Gioia methodology (Gioia et al., 2013). Utilizing the Gioia methodology, we visually represented the data processing journey, showcasing the transformation of raw data into themes. This progression moved from first-order concepts to second-order themes and aggregate dimensions (Figure 1). In the first-order coding phase, we scrutinized interview content to generate items, which were then squared to identify multiple themes aligned with theoretical orientations derived directly from the interview material. These themes laid the groundwork for developing subthemes and units of meaning. In the subsequent second-order coding step, as recommended by Gioia et al. (2013), we aggregated items from the initial phase at various

levels of abstraction (Thiéart, 2014).

Throughout the analysis, we iteratively alternated between qualitative evidence and existing theory (Denzin & Lincoln, 2000; Silverman, 2001). This iterative process allowed us to leverage existing insights to enrich our theory, unveiling novel perspectives. As the theoretical framework gained clarity, we systematically compared it with the literature, accentuating similarities, and differences from prior research. This iterative comparison enhanced internal validity, refining constructs and relationships.

The resulting theoretical logic represents a synthesis of arguments derived from case evidence, existing research, and standalone logical reasoning, aligning with the approach advocated by Eisenhardt and Graebner (2007).

Fig. 1 - The data structure

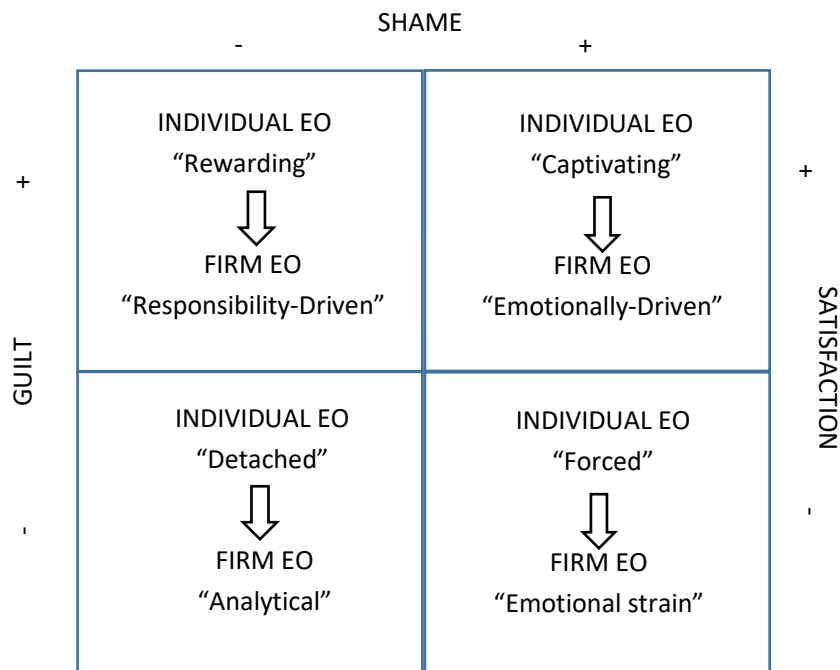


Results. The preliminary analysis of the interview results reveals that emotions originating from various levels (individual, family, and business) significantly impact women's individual EO with relevant effects on the firm's EO.

In particular, we noted that from the individual level, emerge: a. frustration ("Unfortunately, I'm often frustrated because I can't carve out time to take care of myself, and this leads me to almost feel repulsed by new initiatives to launch in my family business. I fear that adding more to my plate could create even more challenges for me. - Case 1); anxiety ("By nature, I fear failure (...). I received a very strict upbringing where one always had to strive for excellence and perfection. This limits my ability to invest in highly risky ventures. Anxiety overwhelms me immediately, and I don't sleep for days..." - Case 2). From the family level, the following emerges: a. anger ("Sometimes I feel anger towards my husband. He should support me, but instead, I perceive him as distant. This sense of loneliness doesn't aid in managing my business because it's like navigating a ship during a storm. I fear going further because I worry that at any moment, the ship might sink." - Case 4); b. sense of support ("My life is a challenge, but I'm not alone. I've my family. (...) In my entrepreneurial journey, my strong sense of security and support within my family inspires me to face challenges confidently and embrace innovation. Knowing I have a secure nest at home feeds my proactive approach in business." (Case 7). Finally, from the firm level emerges a. sense of loneliness ("Too often, I feel alone in facing family and work challenges. Not always do my colleagues support me. That's why I think a lot before making any changes in my business." - Case 3); b. determination ("I am determined, and my business has grit. I love change, chaos, and creativity. Everything is a continuous work-in-progress in my life." Case 7).

However, despite the variety of emotions that surfaced from different levels, surprisingly, three crucial emotions emerged at each of the three observed levels, significantly impacting individual EO. These emotions-guilt, shame, and satisfaction-appear to shape individual EO, subsequently determining four specific configurations of firms' EO. This influence is a result of the positive or negative effects of the emotions that have arisen in women's entrepreneurial behavior.

Figure 2 summarizes the findings:



Analytical EO

When satisfaction, guilt, and shame emerge as relevant emotions but are managed subtly considering them, the women's EO can be described as "**detached**." This implies a decision-making style that leans towards rationality and objectivity, with a limited impact of emotions. The resulting firm's EO could be characterized as "**analytical**," emphasizing data-driven strategies and focusing on efficiency and financial performance. In this context, women-led family firms exhibit an EO marked by a profound focus on risk-taking initiatives. Every innovative endeavor seems to result from a meticulous evaluation of costs and benefits. Rationality seems to prevail over emotions.

The following quote can better explain the concept:

"Frequently, I grapple with a sense of guilt over the limited time I allocate to my family and personal well-being. Entrepreneurship demands much from me, and there are moments when I feel inadequate, unable to meet every challenge. This internal struggle leads to personal dissatisfaction and a sense of defeat for not delivering my best in all areas. However, I'm fortunate to be learning the art of detachment and rationalization within the business, seeking support from others along the way. Managing every aspect of the business, including my emotions, is crucial. Maintaining a rational

perspective, even in the face of chaos, has become my key to success. (...) Constant innovation requires us to silence the heart and engage the brain, often with a calculator by our side (laughter)" - Case 2

Responsibility-Driven EO

When feelings of guilt and satisfaction become evident, and shame is perceived as a motivating force to achieve even greater results, women's EO can be labeled as "rewarding." This fosters a "responsibility-driven" EO oriented toward responsibility within the firm. The perception of a high level of personal satisfaction and the acknowledgment of guilt as a catalyst and driving force for continuous improvement, based especially on introducing constant innovation to be leader in the market, can mitigate the negative effects caused by the sense of shame that women entrepreneurs sometimes feel when encountering gender-related biases. This circumstance fosters in these entrepreneurs the determination to create a work environment free from prejudices, shaping a forward-thinking EO capable of integrating ethics and responsibility into business strategies.

The concept emerges from the following exemplary excerpt:

"Being women entrepreneurs means striving to create an organizational climate centered on responsibility. (...) as a woman, I strongly feel the sense of guilt for the family sacrifices, but it's also my great strength. I owe it to them. (...) I am very satisfied with what I do, because I face several challenges, and even though my motivation often wavers due to a feeling of inadequacy that many people impose on me simply because I am a woman entrepreneur, I bounce back and try to ensure that my company not only focuses on ruthless growth. (...) for this reason, my family firm is a leader! Because I'm very innovative and my firm too. We anticipate our competitors following a different strategy: combining entrepreneurial spirit with the awareness of the burden of responsibility towards everyone" (Case 7).

Emotional strain EO

When feelings of guilt and satisfaction arise, but their impact is perceived as negative, and shame is considered a significant and stimulating emotion affecting decision-making, women's EO may be labeled as "forced." This individual EO is inclined to create an "emotional strain" firm's EO. The term "forced" underscores a sense of external pressure on the individual EO, while "emotional strain" emphasizes the challenging emotional burden experienced at the individual, family, and firm levels. In this case, the firms' EO is characterized by reluctance toward risk-taking, considered a concern rather than the opportunity of grow.

The following quote is particularly meaningful and denotes the continuous tension that emotions create:

"There is still much to do for us female entrepreneurs. We have to prove that we can do everything. (...) Since I was a child, I felt that I was not up to my father's expectations. Today, this feeling of shame for never being enough gives me a huge push to improve and to always seek to be appreciated as an entrepreneur, as a woman, and as a mother. (...) I put a lot of effort into what I do, but then I feel a strong sense of guilt towards my family. It seems to me that I am neglecting my duties as a wife and mother. (...) It makes me feel bad, and I feel oppressed and dissatisfied. On the one hand, I want to soar high; on the other hand, I realize that I am like a kite, always guided by someone else. (...) this is the reason for refusing very risky initiatives. The fear of losing financial resources discourages me from accepting even more challenging adventures" (Case 2)

Captivating EO

When feelings of guilt, shame, and satisfaction serve as pillars of women's EO, the individual EO can be characterized as 'captivating.' Translating this individual orientation into the firm's EO seems to outline an 'emotionally-driven' firm's EO. In this context, 'captivating' refers to the compelling and engaging nature of the individual entrepreneur's emotional experiences, which, when applied to the firm, suggests that the firm's EO is strongly influenced by emotional factors and a focus on psychological well-being. This generates a firm's EO strongly focused on being innovative and proactive.

The following quote can clarify the concept:

"Of course, like all career women, I feel guilt towards my family, especially my children, of course. However, this pushes me to make the most of my time. (...) I am not one to procrastinate, and I translate this characteristics also in my firm. (...) Time is a very competitive variable, and my firm needs to anticipate competitors to be the leader in the market (...) This gives me a lot of satisfaction (...) and when I find myself having to prove that I am skilled and competent, while a man doesn't need to prove it, I feel a strong sense of embarrassment, almost shame because I fear making a mistake. But this unpleasant feeling gives me even more determination and drives me to move forward, to be even more innovative, always, with my head held high." (Case 5)

In summary, our findings shed light on the pivotal influence of emotions in shaping both the individual EO of women and the overall EO of firms. We delineate distinct traits in individual EO and dynamic patterns at the firm level, classifying them based on the emergence and intensity of specific emotions—guilt, shame, and satisfaction. This study bridges a significant gap in the existing literature by offering innovative insights into EO within family firms led by women. Making substantial contributions to family business studies and women entrepreneurship research, the study builds on previous research by emphasizing the importance of emotional factors and revealing the unexpected roles of guilt and shame as two ambidextrous emotions in entrepreneurial decision-making. Despite being initially perceived as inhibitors, our research accentuates their positive aspects, portraying them as catalysts contributing to a well-defined and nuanced firm's EO. In sum, women-led family businesses appear to be sensitive toward sustainability, transcending environmental concerns and encapsulating the well-being of individuals and the societal impact of business practices. Exploring the nuanced emotional dynamics within women-led family firms sheds light on how these dynamics influence sustainable business practices and individual well-being. By understanding the roles of emotions, this study provides insights into how emotional well-being can be integrated into business strategies, thereby contributing to the sustainability of the business and the health of family relationships. Such insights are crucial for aligning with the contemporary push toward holistic sustainability in business management. Specifically, exploring the nuanced emotional dynamics within women-led family firms spotlights a critical aspect of sustainable management practices that support individual well-being and broader societal benefits. The focus on emotions and their impact on entrepreneurial orientation underscores the importance of emotional sustainability in maintaining healthy business and family environments. This study contributes to our understanding of sustainable management in family businesses by addressing how these emotions influence strategic decision-making and leadership styles.

Furthermore, the study sheds light on women entrepreneurs' pivotal role in fostering environments that prioritize emotional well-being, thereby enhancing the firm's resilience and ethical stance.

Finally, exciting insights on father-daughter analysis emerge from our initial analysis that can extend Cesaroni et al. (2015)'s study. We suppose that emotional and professional support from fathers profoundly influences daughters' entrepreneurial orientation (EO) and leadership styles. Daughters who received strong emotional backing and professional mentorship were more likely to undertake innovative ventures and adopt assertive management roles, enhancing the firm's sustainability and innovation. For instance, participants noted that fathers' support not only prepared them for leadership but also inspired confidence and a propensity for risk-taking, which are crucial for navigating traditional gender roles and driving business growth. This dynamic contributes significantly to business governance, succession planning, and the fostering of a sustainable business model, thereby illustrating the essential role of paternal influence in shaping the strategic direction of family-owned firms.

Research limitations. The primary limitations of this study lie in the exploratory methodology chosen, driven by the novelty of the research and the necessity for a longitudinal approach. This is crucial to explore whether and how the impacts of guilt, shame, and satisfaction on individual EO among women, and subsequently on the EO of family firms led by women, evolve over an extended timeframe. To enhance the robustness of our findings, future research endeavors could broaden the sample size, thereby enabling a more comprehensive understanding of whether the results can be generalized. Additionally, repeating the same analysis within the sample firms would contribute to exploring potential variations. Furthermore, adopting a cross-country perspective would be particularly intriguing, shedding light on how emotions change within diverse cultural settings.

Managerial implications. This research underscores the significant impact of emotions on the EO of family firms led by women. By delving into the perceptions of emotions among women entrepreneurs and their integration into the EO of family businesses, valuable strategic insights have surfaced. As the prevalence of women's ownership and management in family enterprises continues to rise, grasping the intricacies of their emotionally oriented EO becomes crucial for a comprehensive understanding of this phenomenon. Consequently, the findings suggest compelling considerations for women, family entrepreneurs, and consultants, providing valuable insights to assess the evolutionary potential of firms and the societal shifts in women's entrepreneurship.

Originality. This study is original in its nature. To our knowledge, there is a lack of research that challenges this relevant topic. Thus, this research is original in both management studies and entrepreneurship studies.

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The impact of board gender diversity on family firms' value: the mediating role of environmental innovation

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Framing of the research. *The 2023 Nobel prize winner Claudia Goldin (2014, pp. 1091), recalling the profound challenges that global society has faced in recent years, stated that “Of the many advances in society and the economy in the last century, the converging roles of men and women are among the grandest”. While we have made significant progress towards gender equality, there are still significant obstacles requiring our attention and action. The 2023 Global Gender Gap Report (WEF, 2023) indicates a modest recovery of female representation in corporations while highlighting a decline in women's representation in leadership roles. Thus, the issue of gender inequality in top-level positions remains a still persistent challenge. This is a timely question related to the wider theme of gender diversity in organizational apical roles, such as boards of directors. As part of the multifaceted gender diversity concept, board gender diversity (BGD) can be defined as “the equitable or fair representation of men and women on corporate boards” (Nuber and Velte, 2021, p. 1959).*

Consistent with recent surveys (e.g., EY, 2023), BGD is also a challenge in certain organizations that have attracted the academic and practitioners' interest due to their peculiar business approach, such as family firms (FFs). The specific organizational setting of FFs is depicted by literature as the “engine of global economy” (Chen et al., 2014), since they manage most economic activities worldwide (De Massis et al., 2018), and emphasizes noneconomic factors in decision-making (Berrone et al., 2012). Among the noneconomic motivations of FFs, we can highlight the preservation of socioemotional wealth (SEW) asset (Gómez-Mejía and Herrero, 2022), which includes nurturing family reputations, retaining family control, adhering to family values, and ensuring continuous business and generational succession (Gómez-Mejía and Herrero, 2022). In this perspective, gains or losses in SEW represent the main reference point in FFs decision-making. Accordingly, FFs are required to design corporate governance (CG) bodies that help a unique business approach to achieve financial robustness, without jeopardizing SEW preservation.

Following the theoretical lens of SEW, prior literature (e.g., Maseda et al., 2022; Wang et al., 2023) suggests that FFs can provide a more favourable organizational climate to empower female leadership. Specifically, FFs' propensity to nurture social and emotional ties between the family and stakeholders might resonate with communal psychological and behavioural traits historically credited to women (Spence & Helmreich, 1978). Attributes such as care, empathy, social orientation, and risk aversion can make women effective stewards of corporate social capital assets. Accordingly, female involvement in FF governance may incentivize business stakeholder orientation, while preserving SEW. At the same time, following prior studies (e.g., Reguera-Alvarado et al., 2017; Galbreath, 2018), a more diverse gender board composition is expected to enhance corporate financial performance (CFP), through the involvement of different perspectives and skills in decision-making.

However, the impact of increased female representation in CG bodies on FFs' financial goal is still a relatively unexplored topic. Indeed, findings in the extant FF literature are mixed or suffer from generalizability limits, thus leaving unanswered the question. Specifically, some studies show a positive impact of BGD on CFP (e.g., Gordini & Rancati, 2016; Vieira, 2018; García-Meca & Santana-Martín, 2023), while other research (e.g., Chadwick & Dawson, 2018) do not confirm this positive link in the specific FFs organizational setting. Other studies, then, are context specific and focus on single countries, such as Italy (Gordini and Rancati, 2017), Spain (García-Meca & Santana-Martín, 2023), and Portugal (Vieira, 2018).

Accordingly, the current study aims to investigate how BGD in FFs can led to higher CFP. Moreover, given the mixed results from previous research, the current study approaches this relationship by also taking into consideration additional factors that may influence it. In this regard we consider two aspects distinguishing FFs, that is: the aim of preserving noneconomic goals (Gómez-Mejía and Herrero, 2022); the propensity to create benevolent ties with stakeholders through the engagement in corporate environmental responsibility (CER) (Miroshnychenko et al., 2022). This propensity can be

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also connected with the broader scenario of climate changes that have introduced new risks and new opportunities for FFs, thus amplifying the relevance of CER (Bathia, 2021). As consequence, FFs must rethink their business models, while developing green innovative solutions that support environmental sustainability. Hence, CER emerges as a prominent business strategy aiming at minimizing the environmental impact of family business activities, by focusing on reducing emissions, using natural resources efficiently, and fostering eco-innovation. Accordingly, the CER is a multi-soul construct (Melo & Garrido-Morgado, 2012), encompassing the capability of firms to generate environmental innovation (Dangelico, 2017; Bathia, 2021).

This growing awareness towards CER has led to the widespread adoption of environmental innovation to achieve a win-win scenario. On the one hand, through CER-orientation in innovative projects, FFs may be strategically aligned with environmental goals, including the mitigation of the negative impact on the environment (He & Jiang, 2019). On the other hand, prior studies (Dangelico, 2017; Bathia, 2021; Gangi et al., 2021), underscore how engagement in green practices can produce tangible and intangible assets, reinforcing CFP and reputation among stakeholders. From this perspective, the environmental innovation can be considered as a cospecialized asset that improves the value of other firm assets (McWilliams & Siegel, 2011), thereby fostering firms' value.

Based on these premises, the link between BGD and CFP may benefit from the level of FFs' CER innovation. This impact is consistent with the preservation of noneconomic goals (e.g., Berrone et al., 2012; Gómez-Mejía & Herrero, 2022), while preserving the continuity of FFs (Hauck et al., 2016).

Consistent with our research framework, based on a worldwide sample of 335 FFs (2009-2020), we first explore the effect of BGD on company's value (Tobin's *Q*). Then, we deepen the link between BGD and FFs' value by investigating the mediating role of environmental innovation.

Purpose of the paper. Over the last years, a growing number of studies have analysed how the proportion of women on corporate boards influence CFP, showing mixed results. Within the FFs context, some studies show that BGD has a positive effect on financial outcomes (e.g., Reguera-Alvarado et al., 2017; Galbreath, 2018), while other studies find inconclusive or negative relationships (e.g., Chadwick & Dawson, 2018; García-Meca & Santana-Martín, 2023; Chapple & Humphrey, 2014; Yarram & Adapa, 2023). These divergence calls for further exploration.

The link between BGD and CFP can be interpreted through the lens of the resource dependence theory (Pfeffer & Salancick, 1978), which states that corporations operate in an open system, and need to exchange different resources for survival. In this sense, as corporate boards are responsible for a firm's strategic orientation (Naciti, 2019), the effectiveness of strategic actions may depend on the mix of resources that directors are able to bring to the board. Indeed, Hillman et al. (2002) argue that gender diversity may be a source of social capital, experience, skills, and networks. In the same vein, Reguera-Alvarado et al. (2017) and Chadwick and Dawson (2018) provide evidence that BGD promotes the integration of broader perspectives and different informational resources that can improve the understanding of the competitive context, thus strengthening the conditions of a positive link between BGD and improved business outcomes (Reguera-Alvarado et al., 2017).

Consistent with Makkonen (2022), boards can benefit from gender diversity in terms of the management of knowledge resources. In particular, greater BGD may result in different ideas and perspectives that may support the ability to value, assimilate and apply new knowledge within the organization. In this sense, diversified boards of directors embody a "healthy mix" of different competences and capabilities that, in turn, may improve the identification of business opportunities and the adoption of innovative solutions (Lu & Herremans, 2019). Accordingly, consistent with FFs prior literature (e.g., Gordini & Rancati, 2016), demographic features, such as board members' gender, may stimulate organizations' creativity and innovation. The fallout of this positive link between BGD and competitiveness can be measured through the increase of FF value, which synthesizes improvements in operational performance from including women in top level managerial decision making, and the reward to BGD from financial stakeholders. Indeed, consistent with the study of Chadwick & Dawson (2018), capital markets show increasing concerns with the convergence of improved business outcomes and social inclusion goals. An additional factor to justify a positive association between BGD and FFs' value. In the same vein, Galbreath (2018) argue that CG mechanisms and an organizational climate that are favourable to female empowerment in leadership positions, may contribute to enhancing the company value.

In light of the above, we posit the following:

H1: BGD positively affect FF value

Under the lens of SEW, Agostino and Ruberto (2021) state that FFs managers may tend to develop an eco-friendly consciousness, due to the high priority to non-financial goals (e.g., family identity, longevity, trustful relationship with local communities). Specifically, the adoption of environmental innovation could be a means for FFs to fulfil social expectations and obtain high social status in the community (Berrone et al., 2012). In this regard, earlier studies (e.g., Zaman et al., 2023) underline BGD as positive leverage of eco-innovative investments due to the greater female attitude to emphasize environmentally-related managerial issues. More specifically, women tend to a higher sensitivity towards the needs of other people, thus incentivizing the board's decisions for the welfare of the community, as in the case of the adoption of eco-responsible practices (Lu & Herremans, 2019; Nadeem et al., 2020).

The above arguments are rooted in psychological literature, that identified people's beliefs regarding female and male attitudes into two behavioural aspects, i.e. communal and agentic (Spence and Helmreich, 1978), which contribute to shape gender stereotypes. Women are commonly correlated to communal traits like morality, empathy and concern

with others, whereas men are mostly associated to the agentic traits like assertiveness and competitiveness. This vision aligns with the expectation that women are inclined to show greater orientation toward corporate sustainability practices and act in alignment with CER principles. In this sense, previous research on women in top management positions indicates that the growing BGD leads to increased engagement in CER (Orazalin and Baydauletov, 2020). This is because, compared to men, women are more likely to exhibit greater sensitivity to the demands of stakeholders and are more supportive of ecological concerns (Boulouta, 2013). Additionally, the female leadership style is correlated to greater awareness of environmental risks and a proactive attitude towards addressing the concerns of environmental stakeholders (Nuber and Velte, 2021). Consequently, as corporate boards functioning is essential for debating on managerial concerns (Naciti, 2019), the eco-conscious characteristics of female directors can influence board discussions, guiding the board towards making CER-focused decisions, including the adoption of environmental innovations.

Thus, under these theoretical grounds, the greater attention of women directors towards ecological issues is likely to lead to a greater engagement of the FF in eco-friendly innovations.

The CER engagement entails practices aimed at reducing ecological footprint and preventing natural depletion by designing environmentally sustainable products (Dangelico, 2017). Kemp and Pearson (2007, p. 7) define environmental innovation as “the production, assimilation or exploitation of a product, process, service or management or business method that is novel to the organization and which results, through its lifecycle, in a reduction of environmental risk, pollution and other negative impacts of resources use compared to relevant alternatives”.

The growing interest of customers and regulators (Khan et al., 2021) for green products and eco-business models fuelled the academic research on the business effect of environmental innovation. In this regard, prior literature (e.g., Dangelico, 2017; Bathia, 2021) highlights how to be compliant with environmental responsibility can foster competitive advantage through reduced operational costs, improved efficiency in resources use, and less polluting business processes. Specifically, following the RBV perspective (Barney, 1991), by intensifying their commitment to environmental innovation, firms can develop strategic resources that are both valuable and difficult for competitors to imitate, such as advancements in green technology, green knowledge and capabilities, higher resource efficiency, and green innovation stewardship, all factors reinforcing competitiveness (Gangi et al., 2021).

Moreover, according to the stakeholder theory (Freeman, 1984), environmental innovation can bolster CFP by fostering trustful relationships with stakeholders, thus reinforcing reputational capital (Surroca et al., 2010). From these perspectives, Dangelico (2017) indicates that companies engaged in the design and the implementation of environmentally friendly products and practices improve their reputation among financial stakeholders, since are less exposed to stakeholder sabotage and future liabilities (Barnett and Salomon, 2012). Furthermore, through eco-innovation, companies can better align their business models to environmental regulations, thus limiting risks of legal disputes. Accordingly, as “co-specialized asset” (McWilliams and Siegel, 2011), environmental innovation contributes to better CFP, by improving competitiveness and corporate reputation, while mitigating firm risk (Gangi et al., 2021).

In light of the above, we posit the following:

H2: Environmental innovation mediates the relationship between BGD and FF value

Methodology. To test our hypotheses, we adopt an international sample of FFs, starting from the list of the World’s Top 750 Family Businesses (Family Capital). We match the Family Capital list with the Refinitiv database to obtain information on BGD and environmental innovation and retrieve financial data from the Worldscope database. We remove 416 FFs due to a lack of information on BGD, environmental innovation or financial characteristics during the study period (2009-2020). This procedure results in a final sample of 335 FFs.

As dependent variable, we proxy FF value through Tobin’s Q . Consistent with Kim and Lu (2011), we compute Tobin’s Q as the sum of the market value of common stocks plus the book value of total liabilities divided by the book value of total assets. As independent variable, consistent with García-Meca and Santana-Martín (2023), we rely on the percentage of female directors (BGD) as measure of gender diversity on corporate boards. Moreover, the mediating variable is represented by the Refinitiv’s environmental innovation score, reflecting a company’s capacity to reduce the environmental costs and burdens for its customers, and thereby creating new market opportunities through new environmental technologies and processes or eco-designed products. About the controls, we adopt the number of independent board directors (B , independence); dummy variable equal to 1 if a CEO chairs the board or if the chairperson of the board has been the CEO of the company, 0 otherwise (CEO duality); total debt divided by total capital (Leverage); the FFs size (Size), as the natural logarithm of the number of employees; capital expenditures on sales (Capex); the firms’ age (Firm Age); finally, we include GDP growth and GDP per capita to control for countries’ economic heterogeneity.

Regarding the empirical strategy, this study adopts the Baron and Kenny (1986) mediation technique, that requires the estimation of three regression equations. First, we estimate the influence of BGD on environmental innovation. Second, we evaluate the effect of BGD on firm value. Finally, we assess the impact of both BGD and environmental innovation on the firm value of FFs. The three equations are formalized as follows:

$$E\text{-innovation}_{i,t} = \beta_0 + \beta_1 BGD_{i,t-1} + \beta_2 X_{i,t-1} + \varepsilon_{i,t-1} \quad (1)$$

$$FV_{i,t} = \beta_0 + \beta_1 BGD_{i,t-1} + \beta_2 X_{i,t-1} + \varepsilon_{i,t-1} \quad (2)$$

$$FV_{i,t} = \beta_0 + \beta_1 BGD_{i,t-1} + \beta_2 E\text{-innovation}_{i,t-1} + \beta_3 X_{i,t-1} + \varepsilon_{i,t-1} \quad (3)$$

where $E\text{-innovation}_{i,t}$ is the degree of engagement in environmental innovation of FF_{*i*} at time *t*; $BGD_{i,t-1}$ represents the measure of board gender diversity of FF_{*i*} at time *t-1*; $X_{i,t-1}$ is a vector of control variables at time *t-1*; $FV_{i,t}$ reflects the firm value of FF_{*i*} at time *t*; and ε is the random error term. Based on evidence from the Hausman test, we perform the three regression equations and adopt fixed effects estimators. All of the independent and control variables are lagged by 1 year to smooth possible reverse causality issues.

Results. Table 1 provides the sample descriptive statistics, and Table 2 reports the correlation analysis. All variables have correlation coefficients below the conventional level of 0.70 (Ratner, 2009), thus indicating that the estimates are not likely to be biased by multicollinearity issues.

Table 3 shows the regression analyses relative to Baron and Kenny's (1986) procedure. In particular, models 1 and 2 show the estimate referring to the influence of BGD on E-innovation, while models 3, and 5 estimate the direct influence of BGD on CFP. Models 4, and 6, instead, display the estimates relative to the relationship between BGD and CFP, also including the environmental innovation (E-innovation) measure among the independent variables. Models 1 and 2 indicate that BGD at time *t-1* positively and significantly impacts E-innovation of FFs at time *t* (at a confidence level of 10%). The empirical models 3 and 5, instead, suggest that BGD at time *t-1* positively and significantly influences FF value at time *t*, at a confidence level of 1%. Thus, we confirm our first hypothesis of a positive impact of higher BGD on FFs value.

Considering, then, our second hypothesis on the mediating effect of environmental innovation, the results from models 4 and 6 indicate that E-innovation partially mediates the positive link between BGD and FF value. Independently from the presence of year dummies, we observe that the magnitude of BGD coefficients decreases in models with E-innovation. For example, regarding empirical models including year dummies, relative to model 5, the magnitude of the BGD's coefficient is lower in model 6. These results indicate that the engagement in environmentally friendly innovations mediates the link between the BGD and CFP, thus confirming our second hypothesis. With reference to control variables, empirical models 1 and 2 indicate that firm size and firm age have a positive and statistically significant influence on FFs' E-innovation. Models 3-5, instead, show that board independence has negative and statistically impact on FF value.

Research limitations. This study suffers certain limitations that could provide directions for further research. First, consistent with Chua et al. (2012, p. 3), FFs present many heterogeneous aspects, including firm size (Aiello et al., 2023). Thus, future studies can focus on smaller and larger FFs, to provide a more comprehensive understanding of how BGD impacts CFP across different types of FFs. Second, additional variables measuring both gender diversity and financial performance could be considered to further enrich the results obtained. Finally, while the current study is limited to mediation approach, future research could include the moderating influence of additional variables, as well as it may refer to others mediating variables. Addressing these limitations could significantly enhance the understanding of the interplay between gender diversity and financial performance in the context of FFs.

Managerial implications. Our study offers several practical implications. First, by enhancing female representation in CG bodies, FFs not only demonstrate commitment to diversity supporting improved reputation towards stakeholders, but also create effective synergies between environmental innovation and SEW assets, thus capitalizing the distinctive leadership style and managerial contribution of women. Second, this strategic approach positively influences financial performance, demonstrating the tangible benefits of integrating gender diversity into FFs' CG mechanisms. Third, for FFs managers, our findings underscore the importance of leveraging gender diversity to enhance environmental innovation strategies. The proactive engagement with gender diversity and environmental innovation can lead to new business opportunities, stronger competitive advantages, and alignment with evolving regulatory and consumer expectations around sustainability. Then, managers are encouraged to approach gender diversity not just as a compliance or ethical imperative, but rather as a strategic asset that can drive both environmental and financial performance.

Originality of the paper. This study offers several valuable contributions. Since the FF literature does not show consensus regarding the BGD and CFP link, it could be important to consider intervening variables to improve its understanding. In this sense, by disentangling the CER multi-soul concept, our study fills this void by considering the mediating role of environmental innovation. At the same time, we show the mediating role of environmental innovation through improved FF value, validating the benefits for financial and nonfinancial stakeholders of funding FFs that engage in environmentally conscious business practices. Finally, we shed light on the link between BGD and CFP by relying on robust evidence from large-scale multi-country empirical analyses. This approach addresses generalizability limitations of prior studies on FFs (e.g., Gordini & Rancati, 2016; Vieira, 2018; García-Meca & Santana-Martín, 2023).

Key words: Board gender diversity; environmental innovation; corporate financial performance; socioemotional wealth; family firms

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Table 1.

Variables	Obs	Median	Mean	Std. Dev.
Tobin's Q	1213	2.93	3.19	1.45
E-innovation	1257	26.16	33.00	31.75
BGD	1255	16.67	17.48	13.78
B. independence	1255	46.67	47.03	22.70
Ceo duality	1256	0.00	0.43	0.49
Leverage	1257	0.77	3.03	63.13
Size	1237	10.14	10.14	1.12
Capex	1257	4.60	7.30	8.93
Firm Age	1257	57.00	77.43	76.71
GDPgrowth	1257	1.41	1.27	3.50
GDP per capita	1250	39,159.42	34,080.89	23,256.76

Table 2

		1	2	3	4	5	6	7	8	9	10
1	E-innovation	1.00									
2	BGD	0.26***	1.00								
3	B. independence	0.04	0.14***	1.00							
4	Ceo duality	0.15***	0.01	0.04	1.00						
5	Leverage	0.00	0.02	-0.02	0.03	1.00					
6	Size	0.24***	0.09**	-0.01	0.05	0.03	1.00				
7	Capex	-0.04	0.02	0.03	-0.02	0.00	-0.12***	1.00			
8	Firm Age	0.21***	0.15***	-0.03	-0.17	0.01	0.22***	-0.06**	1.00		
9	GDPgrowth	-0.17***	-0.23***	-0.04	-0.07**	-0.02	0.00	0.11**	-0.16***	1.00	
10	GDP per capita	0.16***	0.25***	0.06**	0.04	-0.01	0.06**	-0.08**	0.24***	-0.28***	1.00

***, **, * indicate statistical significance at 1%, 5% and 10% level, respectively

Table 3.

Variable	(1)	(2)	(3)	(4)	(5)	(6)
	E-innovation	E-innovation	Tobin's Q	Tobin's Q	Tobin's Q	Tobin's Q
BGD (t-1)	0.187*	0.166*	0.155***	0.153***	0.151***	0.149***
	(1.95)	(1.74)	(4.77)	(4.73)	(4.64)	(4.61)
E-innovation (t-1)				0.025**		0.025**
				(2.34)		(2.45)
B. independence (t-1)	-0.049	-0.045	-0.039**	-0.035*	-0.039**	-0.035*
	(-0.87)	(-0.78)	(-2.05)	(-1.84)	(-1.99)	(-1.79)
Ceo duality (t-1)	1.432	1.610	-1.090*	-1.148*	-1.111*	-1.175*
	(0.80)	(0.90)	(-1.80)	(-1.90)	(-1.83)	(-1.94)
Leverage (t-1)	-0.001	-0.0001	0.000	0.000	0.000	0.000
	(-0.18)	(-0.14)	(0.27)	(0.31)	(0.24)	(0.28)
Size (t-1)	6.212***	6.597***	-0.675	-0.844	-0.821	-1.006
	(3.77)	(3.98)	(-1.09)	(-1.30)	(-1.32)	(-1.61)
Capex (t-1)	-0.097	-0.092	-0.109**	-0.105**	-0.097**	-0.093**
	(-0.83)	(-0.79)	(-2.76)	(-2.66)	(-2.45)	(-2.35)
Firm Age	0.908***	1.150**	-0.391***	-0.413***	-0.193*	-0.222*
	(3.95)	(3.41)	(-5.05)	(-5.30)	(-1.69)	(-1.94)
GDPgrowth (t-1)	-0.197	-0.127	-0.230**	-0.224**	-0.410***	-0.406***
	(-0.74)	(-0.39)	(-2.54)	(-2.48)	(-3.78)	(-3.75)
GDP per capita (t-1)	0.001***	0.001**	0.000***	0.000***	0.000**	0.000**
	(4.24)	(3.20)	(3.98)	(3.74)	(3.38)	(3.24)
Year	No	Yes	No	No	Yes	Yes
_cons	-121.914***	-139.469***	62.697***	65.535***	48.438***	51.830***
	(-6.51)	(-5.55)	(9.13)	(9.42)	(5.39)	(5.71)
No. of Obs.	1257	1257	1214	1214	1214	1214
R-Squared	0.10	0.11	0.06	0.06	0.07	0.08

The digital transformation process of SMEs to compete in the current business environment: evidence from an Italian case

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Abstract

Digital transformation is an essential process for SMEs to maintain their competitive advantage in today's highly competitive, dynamic, and changing landscape. SMEs possess characteristics that can facilitate digital transformation, such as flexibility and agility. At the same time, they have to overcome barriers, such as poorer financial resources than large companies. This study aims to explore the digital transformation process of SMEs, highlighting the factors that favor this transformation and, on the other hand, the elements that can slow down or obstacle this process.

The methodology pursued involves a single case study, an Italian SME operating in the sportswear sector. Semi-structured interviews were conducted with the company's top management, data enriched by the collection of secondary data to facilitate the triangulation of data, subsequently analyzed through a content analysis carried out with the Nvivo 14 software. The results that emerged from this analysis highlighted the importance of the entrepreneurial figure in fostering and stimulating the technological development of SMEs; adequate data processing to obtain more detailed and sophisticated forecasts capable of fostering higher performance standards, new business opportunities, and growth for SMEs; data in driving more thoughtful and reasoned decision-making processes that may, however, become more complex to manage; an enhanced consumer orientation that allows for better satisfaction of demand needs and requirements; and, finally, the crucial role of middle management in managing and orchestrating this digital transformation to avoid potential internal resistance. This research offers several managerial recommendations and insights for future research to explore the factors that can accelerate the digital transformation of SMEs.

Key words: digitization; digital transformation; SMEs; growth; content analysis; case study

Framing of the research. *Digital transformation has triggered significant changes in business models and business processes, requiring new organizational capabilities (Tan et al., 2015; Urbinati et al., 2020). In addition to requiring more specific skills, digital transformation also requires substantial financial resources, typically found in large companies, in which, however, flexibility and agility are more difficult to achieve due to the greater complexity of the corporate structure (Giotopoulos et al., 2017; Nasco et al., 2008). Therefore, digital skills can be acquired more quickly in small and medium-sized enterprises (SMEs) than in large organizations (Scuotto et al., 2021; Sousa & Rocha, 2019). Flexibility, agility, and leaner procedures resulting from a less complex organizational structure (Chan et al., 2019; Fletcher & Griffiths, 2020; Levy et al., 2001) are typical characteristics of SMEs that can facilitate digital transformation (Moeuf et al., 2017). While large companies are already benefiting from the opportunities of digitization and are already facing the challenges and difficulties of digital transformation, SMEs are often still in the early stages of this digital transformation journey (Moeuf et al., 2017).*

In addition to these characteristics of SMEs, the success of SMEs' digital transformation stems from their ability to acquire digital skills within the company, particularly in data analysis (Priyono et al., 2020) and the ability of SMEs to recognize new business opportunities arising from technology (Dutta et al., 2020). The proper management of big data, made available by the innovations introduced, enables SMEs to carry out better analyses and forecasts and understand market dynamics more effectively. Thus, once big data analytics capabilities are acquired, SMEs can enjoy a more complete picture of information concerning the target market and consumer preferences, enabling companies to make more informed decisions in line with market needs (Manika et al., 2017). Therefore, in today's digital ecosystem, the acquisition of certain specific digital capabilities is particularly crucial to respond to the needs of an ever-changing market (Parida et al., 2016; Ravichandran, 2018) that requires constant strategic alignment, i.e., continuous adaptation to proactively respond to exogenous market shocks (Canhoto et al., 2021). Some technologies, such as big data and machine learning, are priority tools to compete in today's digital ecosystem (Subramaniam et al., 2019). Predictive

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models can be obtained from big data to identify behavioral patterns within the data and to manage market uncertainty more effectively (Ferraris et al., 2019). Therefore, in today's digital environment, these capabilities are essential to benefit from more accurate predictions and to seize all growth opportunities (Aquino-Arrieta et al., 2020). An important role is also played by corporate culture, which may be prone to technological innovation and thus facilitate or hinder digital transformation and organizational change (Garzoni et al., 2020). Thus, entrepreneurial orientation can greatly influence SMEs' technology investments (Anwar, 2018).

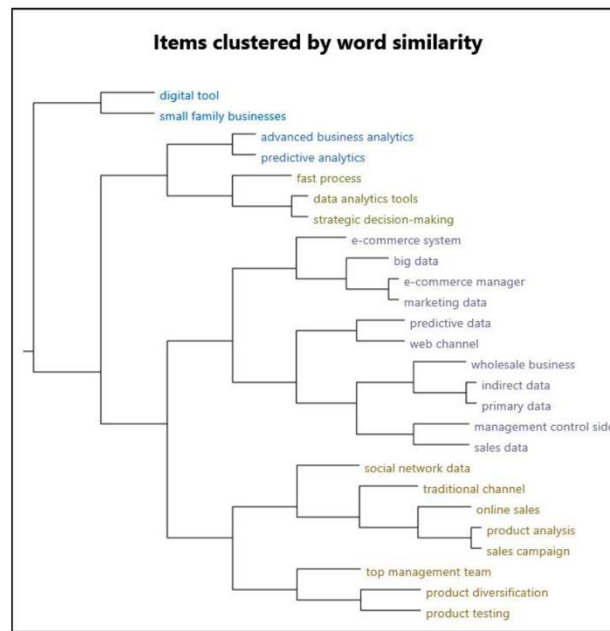
The digital transformation process of SMEs can start with the digitization of products and services and then move on to the digitization of business models and business processes (Soluk and Kammerlander, 2021). For example, SMEs can offer their products to a broader audience, including international audiences, using digital platforms (Li et al., 2018; Olvera-Lobo & Castillo-Rodríguez, 2018) and then move on to change internal processes and business models (Nwaiwu et al., 2020). According to Neirotti et al. (2017), SMEs exhibit higher agility in adapting their processes and business models than larger organizations. This heightened adaptability is attributed to the leaner organizational structure of SMEs, enabling them to reconfigure their business models swiftly and flexibly. Technology adoption and the use of digital platforms play a crucial role in defining the value proposition and taking advantage of an integrated information system (Cenamor et al., 2017). SMEs that manage to align their processes with the adopted technologies can achieve more in terms of growth, performance, and agility (Cragg et al., 2002; Kitchens et al., 2018; Matarazzo et al., 2021; Nasrollahi et al., 2021; Rialti et al., 2019). Therefore, a major challenge for SMEs remains to align their human and technological resources to transform themselves into data-driven companies (Sivarajah et al., 2017). It becomes crucial to effectively combine human intuition and increased knowledge from data (Lindebaum et al., 2020; Merendino et al., 2018). This combination gives rise to the need to manage potential problems, resistance, and organizational difficulties to grasp the opportunities arising from digital transformation. Given the complexity of digital transformation and the various dimensions involved, implementing insights from data into a strategic framework represents a gradual process. Indeed, understanding the technological potential and the routinization of processes concerning the new technologies implemented is a crucial and gradual process (Janssen et al., 2017).

Purpose of the paper. This study focuses on small and medium-sized enterprises as organizations of great relevance for the global economy (European Commission, 2022), in particular for the Italian context (Cardoni et al., 2023). Studies focusing on the evolution of SMEs' digital transformation are still rare in the literature (Marino-Romero et al., 2024). Therefore, addressing the complexity of SMEs' digital transformation, this study aims to explore the digital transformation process from an evolutionary perspective and the potential enabling and hindering factors of this process. Thanks to digital transformation, SMEs can maintain their competitiveness in the current competitive market, seizing new opportunities for growth and development (Matarazzo et al., 2021). In order to benefit from these opportunities, however, SMEs must make significant efforts to overcome potential difficulties and obstacles. In addition, digital transformation can insert SMEs, e.g., using digital platforms, into an international competitive environment in which large global giants also operate, paving the way for potential threats as well (Mazzarol, 2015).

Methodology. To achieve the research objectives, the study presents a single case study of an Italian SME operating in the clothing sector. The choice to focus on the Italian territory stems from the diffusion of this type of organization on the Italian territory, which is strongly characterized by an entrepreneurial management style and family-run organizations (Bresciani et al., 2016; Franceschelli et al., 2018). Since these are SMEs with a strong entrepreneurial figure, they are not usually inclined to release strategic information to the public. Therefore, conducting interviews is an excellent opportunity to come into direct contact with SMEs and to fully understand their internal dynamics (Matarazzo et al., 2021). Therefore, we opted for semi-structured interviews developed with the key informants of the Italian SME chosen as a case study. Specifically, we interviewed the top management, i.e., the heads of the finance, management control, and e-commerce functions. The interviews followed a protocol consisting of several open-ended questions on the topics under analysis and lasted, on average, about one hour each. In addition to the primary data from the interviews, secondary data were also collected from sources such as company reports or websites to obtain a data triangulation. The interviews were recorded after the interviewees' consent, transcribed in full, and translated from Italian into English for content analysis using Nvivo 14 software. Nvivo software has been widely applied in the social sciences and management studies to investigate complex phenomena (Kraiwani et al., 2023). Content analysis has been conducted using the open coding practice, suitable for studying intricate phenomena where multiple factors come into play (Ghezzi & Cavallo, 2020). In particular, the cluster analysis conducted on Nvivo allows the coded aspects within the data to be merged to bring out potential interesting connections and links. It is a particularly useful exploratory tool for identifying associations within qualitative data (Macia, 2015).

Results. Figure 1 shows the cluster analysis conducted by word similarity on Nvivo 14, allowing the subdivision of the topics from the interviews into five main clusters.

Fig. 1: Cluster Analysis



Source: Personal Elaboration from Nvivo 14 software

Cluster 1: Entrepreneurship and technology adoption

The first cluster highlights the typical characteristics of the company, i.e., a small to medium-sized family business, and how they influence technology adoption. In addition to business characteristics, the entrepreneurial figure can also strongly influence the technological development of the business. During the SME's growth and evolution, the entrepreneurial figure has stimulated the experimentation of new technologies and the change of business models to align with the growing technological adoption. Although entrepreneurial intuition is still recognized as crucial, today's business seems more driven by the data made available by the technologies implemented. These technologies function, therefore, as a tool to support the SME's strategic decision-making process. Therefore, many of its business activities today use new technologies and analysis tools to compete in today's increasingly competitive marketplace, adapting to the changing needs of demand. Therefore, from its inception around the 1970s to today, the company has experienced major transformations in business models.

Cluster 2: Data-driven and predictive analysis

The second cluster focuses on advanced analyses and the possibility of performing predictive analyses on the available data to obtain more sophisticated forecasts. These more precise forecasts enable SMEs to achieve higher performance and grow over time. However, the company states that it does not yet have adequate mechanisms for processing such data as it claims to still use rather rudimentary tools for processing. Therefore, the company demonstrates its future interest in investing in specific business analytics skills to foster this knowledge and predictive abilities. The data at hand, if properly managed and processed, allow for more complex analyses and more informed decision-making processes and, thus, enable the company to maximize results even with its stakeholders, such as agents and distributors, reducing the number of inventories and maximizing its sales.

Cluster 3: Decision-making process

The third cluster focuses on the theme of decision-making, which today can be much more data-driven. Thus, it emphasizes the shift from a decision-making process based on the entrepreneur's intuition to a decision-making process centered on the data available and, thus, on the possibility of making much more reasoned and considered strategic decisions. Using big data analytics in strategic decision-making reduces the probability of errors and improves the accuracy of the decision-making process. On the one hand, the greater amount of data available to be included in the decision-making process makes this process much more complex to manage. At the same time, however, it is possible to obtain much more comprehensive assessments of the landscape in which the company operates, using more in-depth analyses, scenario simulations, and risk assessments.

Cluster 4: Customer orientation through e-commerce

A fourth cluster focuses on the topic and role of e-commerce and the transition from a business model focused more on input sales to a more end-consumer-oriented business model. By using digital platforms, both direct and indirect, the company can benefit from much more information about its consumers and, thus, better meet their needs. Using such

platforms has required new data management capabilities from SMEs and multiple channels, as well as the need to protect their competitiveness from potential international competitors. Therefore, SMEs need to take full advantage of their flexibility and adaptability to remain competitive in the marketplace and attempt to meet more effectively the demands of an increasingly environmentally and socially aware public. These digital channels also allow SMEs to test new business strategies and seize new market opportunities.

Cluster 5: Structure of the decision-making process

Finally, the last cluster focuses on how SMEs' flexible and flat structure facilitates rapid decision-making and minimizes the bureaucratic time typical of large companies. This speed of decision-making enables SMEs to respond more quickly to market demands and to establish better partnerships with their stakeholders. However, entrepreneurial vision, managerial role, and strategic thinking remain crucial. The middle manager plays an essential role in orchestrating the evolutionary process of data-driven digital transformation of SMEs. Therefore, a combination of entrepreneurial insight and data analysis, offered by technologies, is needed to combine entrepreneurial intuition and empirical evidence in a synergetic way.

Therefore, the cluster analysis highlights the need for a combination of technology and entrepreneurship in the digital transformation process of SMEs, a process calling for specific skills to manage and process an ever-increasing volume of data. Therefore, the acquisition of dynamic capabilities is an essential element in the transformation process of SMEs (Ciacci and Penco, 2023; Soluk and Kammerland, 2021). Only acquiring digital and analytical skills and capabilities within the organization will enable digital transformation and the achievement of higher performance standards (Ramdani et al., 2022), such as a higher sales volume resulting from increased demand satisfaction. Consumers today also demand from SMEs a focus on environmental and social practices with their production (Le, 2023). Therefore, with their flexibility and agility, SMEs must reactively respond to market demands, benefiting from more comprehensive and reasoned decision-making processes facilitated by the combination of entrepreneurial intuition and multiple data at their disposal (Marino-Romero et al., 2024).

Research limitations. This study is not without limitations, as it only describes one case study. This does not make the results of the analysis generalizable. Future lines of research could explore the phenomenon by analyzing more cases within the Italian national territory densely populated by SMEs. Taking into consideration also different geographical contexts, from that of Italy, or different sectors, from that of clothing, could highlight some differences arising from cultural, economic, and social factors or sectoral dynamics that could accelerate or slow down the digital transformation of SMEs. A longitudinal analysis would allow a better understanding of the role of the different enabling factors within the different stages of SMEs' digital transformation.

Managerial implications. This study offers important managerial implications. It represents a useful guide for middle management in understanding how to facilitate the digital transformation process of SMEs, e.g., by fostering the development of big data analytics skills within the organization for better analysis and management of available data.

Middle management thus plays a crucial role in coordinating the digital transformation of SMEs (Annosi et al., 2023). Besides the relevant role of middle management, the entrepreneur's innovative spirit and a corporate culture open to innovation also facilitate and accelerate this process (Lin and Kunnathur, 2019; Urbinati et al., 2019). All these elements need to be properly nurtured and stimulated, e.g., by engaging in good integration between technologies and personnel to avoid potential resistance and difficulties. These aspects can be encountered when an entrepreneurial company transforms into a data-driven company (Lindebaum et al., 2020; Merendino et al., 2018).

By leveraging digital transformation, managers can identify new business opportunities and enhance performance. Using digital platforms, social media, and online review platforms, SME managers can have more information about their consumers and, therefore, experiment with new strategies to solve any problems recognized by the public. This knowledge enables SMEs to adapt their offer to market needs more effectively and, thus, increase sales. Therefore, digital technologies can enable SMEs to implement more effective strategies and optimize certain costs (Bouwman et al., 2019; Foroudi et al., 2017).

In summary, digital transformation offers SMEs powerful tools to improve customer insight, increase business performance, make forecasts more accurate, support data-driven decision-making, increase resilience, and better meet market demands. However, these opportunities require a strategic commitment to adopt and integrate these digital technologies into the company's core business to facilitate this transformation. SMEs often lack such capabilities and, therefore, should understand the need to find outside specialists who excel in data analysis (Erevelles et al., 2016). As these professionals are scarce and difficult to find in small and medium-sized companies, SMEs may establish strategic partnerships with others to benefit from specialized and highly trained knowledge (De Mauro et al., 2018). Otherwise, an absence of such capabilities would lead to a mismanagement of the available data. As a result, SMEs may make wrong decisions and lose favorable business opportunities (Manika et al., 2017).

Originality of the paper. The originality of this study derives from observing the digital transformation of SMEs from an evolutionary perspective, i.e., moving from the digitization of products to that of decision-making processes and business models. The study also highlights some enabling and hindering factors SMEs may encounter along their digital transformation process.

The focus on SMEs may be interesting in that much of the research in the digital transformation literature has focused on large organizations, neglecting the inherent difficulties of this process for organizations with fewer financial

resources. Therefore, exploring the digital transformation process of SMEs as a key to preserving business competitiveness in today's marketplace and increasing performance can enrich the academic debate and offer recommendations for both managers and policymakers who should consider how to incentivize the digital transformation of such relations, which are particularly important for the global economy.

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Track 10
Strategic Communication

Millennials and Bookfluencers: a cross cultural analysis

LINDA GABBIANELLI¹

Abstract

Bookfluencers are social media influencer specialized in literature and books.

This study aims at investigating the perception of bookfluencers and their role in the purchasing process by Italian and French millennials.

The study is based on the results of a survey carried out through an online questionnaire. The sample under investigation is represented by 601 millennials.

Findings reveal that millennials perceive bookfluencers as believable people that provide honest reviews. Concerning the purchasing process, bookfluencers facilitate the search for information and the evaluation of alternatives.

Millennials are passive spectators by liking posts and have a low level of interactions with bookfluencers posts.

The study reveals also that there are significant differences in perceiving bookfluencers and in their role in the purchasing process between Italian and French millennials. The study contributes to expand the literature on influencer marketing in a sector underinvestigated, that is the book sector and adopting a cross cultural perspective.

The limits of the work concern mainly the generational cohort investigated and the consumer perspective.

Key words: *social media influencers; millennials; books; cross-cultural analysis; Italy; France.*

Framing of the research. *The rise of social media influencers has become a phenomenon in today's digital media communication. An influencer or social media influencer is a content creator who has expertise in an area and has built a substantial network of people as followers by producing valuable and creative content on social media platforms (Lou and Yuan 2019, Varsamis, 2018).*

social media influencers are often able to exert significant influence over the opinions and behaviours of the audience who look up to them (Bu et al. 2022).

Balakrishnan et al. (2014) investigated the impact of social media marketing on brand loyalty and purchase intention and found that social media marketing, especially electronic word of mouth (WOM), online communities, and online advertising, has positive effects on brand loyalty and purchase intention. Also Gautam and Sharma (2017) emphasized that social media marketing and customer relationships have a significant and positive impact on customers' purchase intentions. In turn, Sousa and Alturas (2020) found that online media is very important for the 'information research' stage of the purchase decision process, with Facebook, YouTube, and Instagram being the social networks with more users and more digital influencers. Balaban and Szabolcs (2022) argue that social media influencers always strive to remain authentic in their interactions with followers and brands, but that promotional activities pose a challenge to their authenticity.

Perceived social media influencers authenticity is a multidimensional construct consisting of sincerity, genuine endorsement, visibility, expertise, and uniqueness (Lee and Eastin, 2021).

Each dimension has varying effects on consumers' evaluation of a social media influencer, willingness to follow a social media influencer, and intention to purchase products recommended by social media influencers.

The main followers' perceptions based on influencers' attributes consist in trustworthiness and perceived expertise. Trustworthiness is related to the credibility of a source or person and the extent to which the source is considered valid (Masuda et al., 2022). Perceived expertise and authenticity are usually accompanied by trustworthiness in predicting positive social media marketing outcomes (Masuda et al. 2022; Chapple, Cownie, 2017; Schouten et al. 2020).

Lastly, purchase intention refers to the behavioral intentions of influencers' followers (Gomes et al. 2021). It is known that the perceived characteristics of influencers, generated from their personal attributes, can generate purchase intentions.

Reading is essential for learning in education. However, the digital revolution has transformed the ways to encourage reading and learning about books.

Bookfluencers are people who talk about books on the web and who they manage, through the contents they create, to guide the choices of other readers, because they generate a community around them that listens and takes their reading recommendations into consideration, thus becoming micro-celebrities (Zaffiro, 2023; Martensen et al., 2022)

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Bookfluencers build their reputation starting from their literary interests, communicating them in their social networks, and creating, in many cases, an affective bond with their followers (Onofrei et al. 2020; Jaiswal et al. 2018).

Bookfluencers have evolved in their way of communicating, attracting, and entertaining their followers to the same extent that social platforms and networks have. Booktubers, bookstagrammers, and booktokers are the latest manners of referring to bookfluencers who respectively use YouTube, Instagram, and TikTok to disseminate and promote literary works (Saima, 2020; Dolan et al., 2019).

Concerning the book readers, the data provided by ISTAT, based on the 2023 report, are not very encouraging. In 2022, the percentage of readers is 39.3%. They are mainly young people between 11 and 24 years old who are engaged in reading activities, predominantly female.

As regards the French situation, the percentage of readers is 89% in 2023. Even in France, it is mainly women who are engaged in reading, aged between 15 and 24.

Most importantly, consumers choose to follow influencers because they are 'genuine, open and relatable' (Lee et al., 2021).

Although there are several studies on influencers and the role they play in purchasing processes, the literature regarding bookfluencers is scarce. The work of Magadán-Díaz et al., (2023) conducted in Spain, analyzed the persuasive power of bookfluencers. It emerged that it is bookstagrammers and booktokers who exert the greatest persuasion, while booktubers to a lesser extent, and the main factors involved are the content, the length, the quality of the information, the images, the sound and visual effects and by the voice of the influencer.

Despite the spread of studies about influencer marketing, its application in the book/publishing sector is relatively scarce. Tanwar et al. (2023) stated that the most of studies on influencers have been conducted in United States, Germany, India, Australia, and the Netherlands. In addition, in most of cases studies do not have an industry focus even if the industries most frequently discussed in articles are fashion, beauty and the travel industry. Therefore, from the literature emerges the necessity to explore other industries in unexplored countries in order to deepen the impact of influencers on the perception of digital consumers (Lou, Tan, and Chen 2019).

To fill this gap and gain better understanding of the social media influencers, the study aims at investigating the perception of bookfluencers and their role in the purchasing process by Millennials.

Purpose of the paper. The aim of the study is to investigate the millennials attitude towards influencers in the book/publishing sector. In particular, the paper aims to investigate the cultural differences of gen Z towards answer the following research questions:

1. Which is the perception of bookfluencers by gen y?
2. Which is the influence of bookfluencers in the purchasing process by gen y?
3. Which is the level of engagement of gen y on the bookfluencers activities?

Methodology. The present study aimed to answer the research questions by means of empirical analysis. A structured questionnaire was administered online to a sample of Italian and French millennials (born between 1980-1996). This questionnaire was distributed via computer-assisted web interviewing (CAWI) from September to November 2023.

A total of 601 young consumers completed the questionnaire voluntarily. To create the questionnaire items, the authors drew from the literature on social media influencers (adapted from Zaffiro, 2023; Campbell, Farrel, 2020; Tolstopyat, 2018; Li, Peng, 2021). A five-point Likert scale was used to evaluate the items, except for the socio-demographic items.

The data were processed using SPSS software. Descriptive statistics were performed to summarize the participants' responses and make inferences about the survey data. Additionally, an ANOVA analysis and chi-square test were performed to statistically test the equality of means and to analyze differences in behavior between the Italian millennials and the French millennials.

Results. The table 1 shows the main features of the sample.

The sample is composed mainly by young women that are studying or are employee. Concerning the type of reader, France is a country where the habit of reading is more widespread than in Italy because the percentage of strong readers (people that read at least 12 books per year) is higher.

Table 1 - profile of the sample

Feature		Italy (%)	France (%)
Gender	Women	91%	89%
	Man	9%	9%
	Other	1%	2%
Profession	Student	61.1%	44.7%
	Employee	22.3%	31.9%
	Freelance	6.9%	5%
	Unemployed	2.8%	5.3%
	Worker	1.9%	0.7%
	Teacher	1.3%	3.6%
	Other	1.5%	5.4%
Type of reader	Strong reader	38.6%	51.8%
	Medium reader	34.8%	33.3%
	Weak reader	26.6%	14.9%

Source: our elaboration

Millennials perceive bookfluencers (Table 2) as believable people that provide honest reviews. Influencers are also considered as source of inspiration for the readers. For both France and Italy, promotional hashtags do not negatively impact users' perceptions of bookfluencers (respectively mean 2.37 and 2.10), and users trust their information.

Comparing the perception of the two countries, it emerges that there is a significant difference in terms of credibility (sig.=0.009), identify oneself with influencers (Sig.=0.001) and the honesty of reviews (Sig.=0.000). In particular, Italian millennials have a better perception of influencers respect to French except for the identify themselves with influencers.

Table 2 - Perception of bookfluencers by millennials - comparison between Italy and France

Perception of bookfluencers	ITALY		FRANCE		F	Sign.
	Mean	SD	Mean	SD		
Expertise of influencers	3.54	0.837	3.35	0.860	3.113	0.079
Credibility of influencers	3.90	0.878	3.61	0.845	6.918	0.009
Source of inspiration	3.72	1.135	3.71	1.035	0.002	0.965
Identify oneself	2.69	1.201	3.21	1.227	12.155	0.001
Autentic content	3.68	0.983	3.60	0.994	0.444	0.506
Trust in information and review provided	3.59	0.922	3.39	0.866	2.991	0.085
Sincere reviews	3.94	0.846	3.56	0.889	12.584	0.000
Impact of # in the content	2.37	1.260	2.10	1.130	3.268	0.072

Sig. at level 0.005

Source: our elaboration

Concerning the *ROLE OF INFLUENCERS IN THE PURCHASING PROCESS* (Table 3), the results show that French millennials are influenced mainly by the author of a book (69.9%), by word of mouth (63%) and by the book cover (58.2%); while Italians from online reviews (57.7%), from the author (52.7%) and from word of mouth (47%). The chi-square test shows that all these factors have a significant difference between the two countries except for the online reviews.

Table 3 - Factors affecting the book purchase - comparison between Italy and France

Factors affecting the book purchase	ITALY	FRANCE	All sample	Chi-square	Sig
Book cover	36.7%	58.2%	47.45%	27.738	0.000
Author	52.7%	69.9%	61.30%	18.554	0.000
Publisher	16.0%	30.1%	23.05%	17.128	0.000
Word-of-mouth	47.0%	63.1%	55.05%	15.648	0.000
Online reviews	57.7%	51.8%	54.75%	2.110	0.146
Advertising	16.3%	27.0%	21.65%	10.127	0.001

Sig. at level 0.005

Source: our elaboration

For both French and Italian millennials (Table 4), bookfluencers facilitate the search for information and the evaluation of alternatives. Bookfluencers have a considerable impact on purchases: online reviews, in fact, plays a relevant role in the purchase decision.

However, millennials are not inclined to advise a book only because is sponsored by an influencer.

The ANOVA analysis revealed that there are significant differences between Italian and French millennials in terms of ease to find information (sig.=0.005), help to evaluate alternatives (Sig=0.029), intention to buy an editorial product only because is sponsored (sig.=0.001) and the intention to recommend a sponsored book (0.001). Notably, for Italian millennials the role of bookfluencers in the purchasing process is higher than French millennials.

Table 4 - Role of bookfluencers in the purchasing process - comparison between Italy and France

Role of bookfluencers in the purchasing process	ITALY		FRANCE		F	Sign.
	Mean	SD	Mean	SD		
To make easier to find book information	4.11	0.897	3.79	0.956	7.887	0.005
To help to evaluate alternative of choices	3.94	0.906	3.66	1.107	4.829	0.029
Intention to purchase a sponsored book on social media	3.22	1.056	3.00	1.058	2.734	0.099
Intention to buy an editorial product only because is sponsored	2.22	1.219	1.76	1.025	11.024	0.001
Intention to recommend a book just because sponsored	1.82	1.018	1.44	0.755	11.438	0.001

Sig. at level 0.005

Source: our elaboration

The level of engagement of millennials towards the bookfluencers online activity (table 5) is quite different.

As a matter of fact, french millennials are more engaged with bookfluencers, mostly in terms of being part of a community (mean 3.8), liking influencers' content (3.96) and be influenced by the content itself (mean 3.69).

Italian millennials, instead, tend to like influencers' content (mean 3.52), the emotions provoked by the content (mena= 3.20)

In general, both Italians and French millennials limit themselves to being passive spectators by liking posts, especially the latter, with very limited interaction especially for Italy.

The different level of engagement is confirmed by the significant difference emerged from the anova analysis (sig.<0.005), except the emotions that the content arouses.

The passion for reading (85%) is the main reason that pushes the two targets to follow bookfluencers, together with the affinity in terms of reading preferences (70%) and the desire to be updated on editorial news (71%).

The Anova analysis reveal that there is a significant difference between the two countries in terms of passion for reading (Sig.=0.029), the updated on editorial news (sig.=0.000) and the identification themselves with the influencers (Sig.=0.019)

Table 5 - Level of engagement of millennials towards bookfluencers - comparison between Italy and France

Level of engagement of millennials	ITALY		FRANCE		F	Sign.
	Mean	SD	Mean	SD		
Be a member of book communities	2.57	1.568	3.80	1.436	43.268	0.000
Intention to like an influencer's content	3.52	1.131	3.96	1.138	9.489	0.002
Intention to comment and interact with an influencer's content	1.97	1.195	2.65	1.211	20.891	0.000
Intention to share an influencer's content	1.83	0.979	2.20	1.132	8.030	0.005
Be influenced by the content itself	2.97	0.967	3.69	0.998	35.366	0.000
Be influenced by the emotions that the content arouses	3.20	1.083	3.37	1.171	1.557	0.213

Sig. at level 0.005

Source: our elaboration

Both samples let themselves be influenced both by the content and by the emotions that it arouses, with greater importance of the content for France, but the presence of the bookfluencer in the posts does not impact the closeness perceived by the users.

Table 6 - Reasons for following bookfluencers - comparison between Italy and France

Reasons for following bookfluencers	ITALY	FRANCE	All sample	Chi -square	Sig
Passion for reading	80.4%	90.1%	85.25%	4.760	0.029
Be informed about editorial news	56.6%	86.8%	71.70%	28.590	0.000
Identify oneself	5.6%	14.0%	9.80%	5.466	0.019
reinforce the belonging to the community	6.3%	11.6%	8.95%	2.294	0.130
Entertainment	42.7%	44.6%	43.65%	0.104	0.748
Opinion leader	7.7%	5.0%	6.35%	0.813	0.367
Similar reading preferences	67.8%	73.6%	70.70%	1.031	0.310

Sig. at level 0.005

Source: our elaboration

Research limitations. The study presents some limits, for example it is focused on the millennial's perception, so it could investigate other generational cohorts, or the bookfluencers perception.

Furthermore, it would be interesting to carry out an investigation adopting the perspective of publishers, to see if the collaboration with bookfluencers is fruitful and represent a competitive advantage given the costs to be incurred.

In addition, the study does not investigate the type of content (format) most appreciated by young consumers as well as the sentiment.

Third, the study could expand the observation to other countries and investigate differences and similarities in the role of social media influencers in the book sector.

Managerial implications. The role of social media influencers is becoming increasingly significant in both research and the industry. Influencers enables a unique and faster approach to connecting with audiences that traditional channels may not be able to reach. The social media influencers leverage their influence in a more effective manner with their credibility that can positively impact brand attitude, purchase intention, wishful identification and awareness which consequently leads to improved public relations, product attractiveness and higher engagements (Schouten et al., 2021; Kamaldeep, 2021).

The social media influencers' contents about up-to-date details of the latest products and brands are beneficial as they reduce the effort needed for consumers to search for information (Cheung et al., 2020).

Furthermore, social media influencers can educate consumers and improve the information quality of the content on the use of trending products from various industries by sharing reviews, recommendations, and opinions (Schouten et al., 2021).

From the firm's perspective, in the digital marketing context, developing and maintaining long term partnerships with a selective group of reliable social media influencers is a crucial strategy for success (Wu et al., 2021; McMullan et al., 2022)

The current study highlights the fact that bookfluencers play an important role in the purchasing process of millennials both in Italy and in France. Consequently, bookfluencers can be considered a precious resource for publishers that want to increase their visibility, increase brand awareness towards of the publishing sector and, ultimately, increase sales.

From a cultural point of view, bookfluencers play a key role for the younger generations and beyond, as they are able to bring back into vogue a declining activity, that of reading, which is fundamental for broadening one's horizons, enrich one's cultural background, develop a critical spirit, improve language skills and, more simply, to escape from everyday life.

Originality of the paper. The study has different aspects of originality:

First of all, the social media influencer marketing has been applied to numerous context (tourism, fashion, beauty) but there are not studies concerning the book sector. Secondly, the study is focused on the young consumers, that is Millennials. Third, the context investigated as there aren't previous studies conducted both in Italy and in France.

Lastly, the intercultural perspective of the analysis in which the role of social media influencers is investigated.

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The effectiveness of communicating food security in Agri-food firms: an exploratory study from the entrepreneurial perspective

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Abstract

This study aims to understand how Italian firms in the agri-food sector communicate food safety and how communication impacts business performance. This piece of research is a “work-in-progress” and it is part of a wider research on food security.

A survey was conducted on micro and small agri-food firms and a sample of 149 firms was selected. SEM was performed to understand how these communication tools relate to business performance. We found that both traditional and digital communication tools positively and significantly impact communication performance. However, traditional communication seems to be much more effective.

Keywords: *traditional communication; digital communication; business performance; Agri-food; micro and small firms.*

Framing of the research. *In this study, we adopted this definition of food security: “the condition of the foodstuffs in all stages of production, processing, and distribution, required to guarantee the protection of consumer’s health, also taking into account normal circumstances of use and information available for the foodstuffs concerned” (Baert et al., 2011). In short, food can be considered safe if it is the result of a combination of primary healthy and controlled resources, with no risk to consumer health.*

Food security is a wide concept that includes not only the compulsory “food security” but is strictly related to well-being and environmental sustainability. Safe food contributes to improving the well-being of individuals and societies and good quality raw materials to manufacture food products contribute to the preservation of soil and climate.

However, the literature on well-being is almost always separated from the literature on environmental sustainability (Roberts et al., 2015) and social sustainability. These two streams of research could be further enriched if they were integrated, taking a more holistic perspective on well-being and an increased awareness of the limits of individual well-being pursuits (Kjell, 2011).

Hence, this study contributes to filling this research gap by adopting a wide definition of food safety, integrating well-being and sustainability.

Consumers are increasingly interested in food safety (Baert et al., 2011) and agri-food companies should improve communication effectiveness to reduce perceived risks (Santeramo & Lamonaca., 2021) and maintain companies’ competitiveness.

Content is a key element of marketing communication, especially in the online environment. Consumers look for useful and interesting content for their needs, interests and expectations. Firms are asked to disseminate content in all communication tools. Content marketing consists of the creation, dissemination and sharing of relevant, interesting and timely content to engage clients in all touch points of the customer journey, with the final scope of conversion (Holliman and Rowley, 2014).

The literature on the communication of agri-food firms is heterogeneous and fragmented as it investigates specific communication tools (website, social network, influencer, etc.) and on specific sectors such as wine, cheese, honey, etc. (Dolan and Goodman, 2017; Ingrassia et al., 2020). More specifically, empirical studies on food safety communication are still rare and those adopting a broad perspective are even more scarce (Conti et al., 2023).

A recent study by Conti et al. (2023) has examined the impact of traditional and digital communication on sales and customer loyalty of SME agri-food firms, adopting the Dynamic Capabilities theory, interpreted as an extension of the RBV theory and suggesting that resources and capabilities interact in determining firm performance outcomes (Henderson and Cockburn, 1996; Teece et al., 1997). They found that corporate websites impact positively both

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engagement and sales, while corporate websites, traditional advertising, PR impact positively sales.

This study takes a marketing perspective and considers marketing resources as the assets available to marketers and others within the organization that – when transformed by the firm’s marketing capabilities – can create valuable outputs (Morgan, 2011). Communication resources and capabilities are considered key marketing capabilities associated with customer value delivery (McKee et al., 1992).

Hence, there is space to understand if these tools allow them to communicate effectively. In particular, this study aims to understand how they impact communication performance, operationalized through brand awareness, customer engagement, lead generation, and sales items. It builds on the theoretical framework of Dynamic Capabilities theory and the studies in marketing literature pointing out the positive impact of effective communication tools on performance.

We assume that effective marketing communication is an important factor in maintaining business success also in the Agri-food sector and that it is crucial to combine digital and traditional communication to be successful. Traditional communication tools include advertising that can be done through print papers such as newspapers, brochures, and magazines, audio media such as radio, and visual media such as billboards and television (Kotler and Armstrong, 2010) and PR (Invernizzi and Romenti, 2020). Main digital communication tools are corporate websites, social networks, and email (Gregori and Pascucci, 2019; Tuten and Solomon, 2018).

Through effective content creation and dissemination, firms can enhance brand awareness, customer engagement, lead generation, and loyalty (Hollebeck and Macky, 2019).

Brand awareness is the first goal of communication, in the pre-purchase phase of the customer journey. Effective communication in this phase contributes to increasing brand awareness (Kim et al, 2003; Aaker, 2010; Sawant, 2012; Ateke and Nwulu, 2017).

With the emergence of social media, customer engagement has become an important goal for reaching superior brand performance (Barger et al., 2016; Oviedo-García et al., 2014). Furthermore, perceived brand interactivity (Gligor et al., 2019b) and satisfaction with the brand (Pansari and Kumar, 2017) positively impact customer engagement. Effective communication is essential for successful lead generation (Poeyry et al., 2017) and sales increase (David et al., 1988; Gregori and Pascucci, 2019).

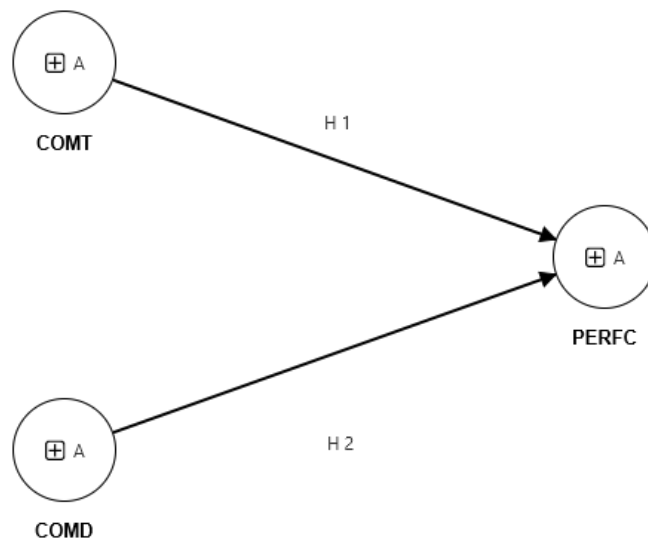
Purpose of the paper. The purpose of the study was to analyze the impact that traditional communication (COMT) and digital communication (COMD) have on communication performance (PERFC). The research question was the following: How much does corporate communication, integrated with the principles and practices of sustainability and food safety, improve the company’s performance?

We hypothesized that:

H1: There is a positive direct relationship between COMT and PERFC;

H2: There is a positive direct relationship between COMD and PERFC.

Figure 1: Research model



Methodology. We collected survey data from January to February 2021 from Italian SMEs. We selected a sub-sample made of 149 micro and small firms, from the representative sample of 900 SMEs from the AIDA database. Our sub-sample uses the following search criteria: number of employees between 1 and 49 available financial statements, active businesses, with available telephone contacts, operating in sectors identified by the ATECO codes 10 - Food industries and 11 - Beverage industries.

Out of 900 firms, 149 took part in the research, representing about 7%. No questionnaires were excluded because they were all filled in. Approximately 54% of the firms employed up to 9 employees while the remaining 46% between 10 and 49 employees.

The questionnaire was administered using two methods: CAWI (Computer Assisted Web Interviewing) and CATI (Computer Assisted Telephone Interviewing). The companies that participated through the CAWI method were 139 (93.2%), while those that participated through the CATI method were 10 (6.8%).

The research model includes three first-order constructs. Measurement scales for COMT were taken or adapted from (Kotler and Armstrong, 2010; Invernizzi and Romenti, 2020). Scales for COMD were taken or adapted from previous work of (Gregori and Pascucci, 2019; Tuten and Solomon, 2018) Finally, PERFC scale was taken from (Barger et al., 2016; Gligor et al., 2019b; Pansari and Kumar, 2017; Poeyry et al., 2017; David et al., 1988)

Measurement scales include the following items:

- COMT: Traditional communication (impersonal communication, such as brochures, advertising in magazines, etc.) personal communication (internal staff and external collaborators) and social or environmental sustainability report.
- COMD: Digital communication (corporate website, social network, email, etc.)
- PERFC: Performance of communication on awareness, engagement, lead generation, and sales.

Results. Internal consistency reliability, convergent validity and divergent validity

We assessed the psychometric properties of scales in terms of reliability, convergent validity and discriminant validity. For reliability test we used Cronbach's Alpha ($\alpha \geq 0.7$) and Dillon-Goldstein's rho ($\rho \geq 0.7$) (Hair et al, 2010). As shown in Table 1 measurement scales have adequate convergent validity (Hair et al, 2010). We assess discriminant validity using both Heterotrait-Monotrait Ratio (Table 2) (Henseler et al., 2015) and Fornell-Larcker criterion (Table 3). No value is above the recommended threshold and discriminant validity is assured.

Table 1: Reliability and convergent validity

Reliability and convergent validity					
Inherent variables	Items	Loadings	Cronbach's alpha	Dillon-Goldstein rho	AVE
COMD			0.775	0.785	0.686
	COMD1	0.818			
	COMD2	0.844			
	COMD3	0.824			
COMT			0.720	0.728	0.640
	COMT1	0.822			
	COMT2	0.802			
	COMT3	0.775			
PERFC			0.921	0.926	0.809
	PERFC1	0.886			
	PERFC2	0.874			
	PERFC3	0.931			
	PERFC4	0.905			

Table 2: Heterotrait-Monotrait Ratio (HTMT)

HTMT			
	COMD	COMT	PERFC
COMD			
COMT	0.883		
PERFC	0.613	0.758	

Table 3: Fornell-Larcker criterion

Fornell-Larcker			
	COMD	COMT	PERFC
COMD	0.828		
COMT	0.667	0.800	
PERFC	0.532	0.626	0.899

Testing of hypothesis

Data were analyzed using PLS-SEM and SmartPLS software (4.1.0.0) (Ringle et al., 2022)

PLS is a structural equation modeling technique widely used in the marketing and management field. It requires a sample size ten times the number of indicators associated with the most complex construct (four in this study) or the largest number of antecedent constructs linking to an endogenous construct (two: COMT, COMD) (Hair et al, 2010). Therefore, the present research model would have been valid with 40 responses. Figure 2 shows the results of the structural model.

Figure 2 – Results of the structural model

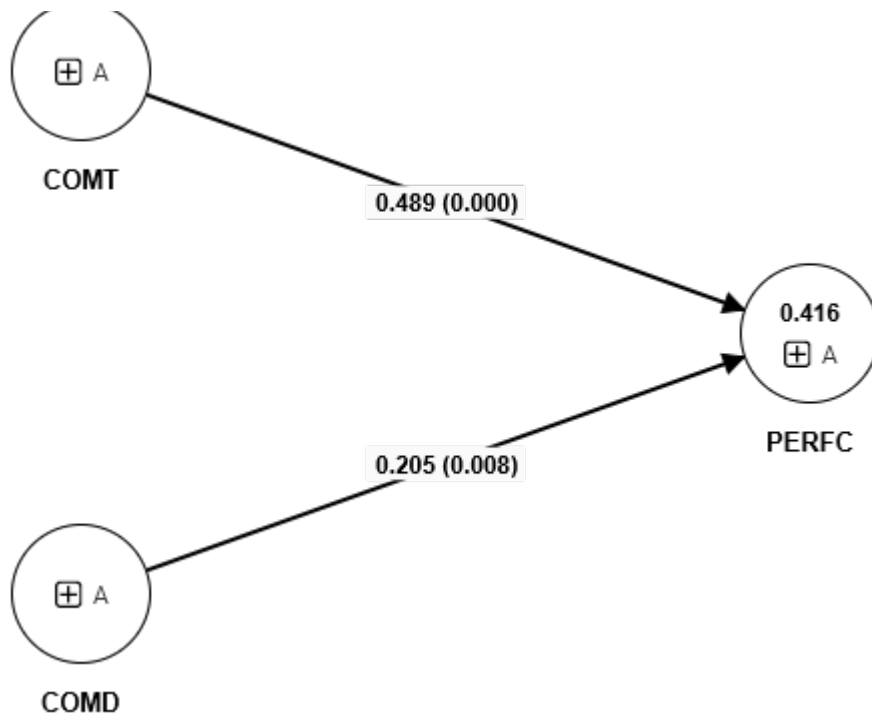


Table 4: Results of the structural model

Hypothesis	Path	Path coefficient	T-value	P-value	Status
H1	COMD -> PERFC	0.205	2.651	0.008	Supported
H2	COMT -> PERFC	0.489	6.417	0.000	Supported

Table 5: Effect size

	f ²
	PERFC
COMD	0.040
COMT	0.228

Discussion and Conclusion

The goal of the present paper is to empirically test the impact that traditional and digital communication tools have on communication performance.

We tested our hypotheses on a sample of 149 Italian SMEs using PLS-SEM and found good parameters for all latent variables.

As shown in Table 4 both hypotheses are supported confirming the theoretical assumption and empirical results.

Table 5 shows the effect size f^2 , that is the change in the value of R^2 when an exogenous construct is omitted, and it is used to understand whether its impact on the dependent variable is substantial or not. Values of 0.02, 0.15, and 0.35 represent small, medium, and large effects, respectively (Hair et al., 2010). As evident from Table 5, the most substantial impact on the PERFC variable is exerted by COMT, confirming that traditional communication tools have a stronger impact on PERFC.

As the sample is made of half of the micro firms and the other half of small firms, most probably entrepreneurs invest more in traditional communication tools for disseminating information about food safety such as personal communication, advertising, environmental reports, or PR such as participation in sector fairs.

Conversely, the adoption of new digital communication tools is still very low, thus confirming the results of previous studies conducted in the agri-food sector. The results of this empirical study show that probably entrepreneurs of small firms lack the digital culture and financial resources that characterize many small businesses.

Research limitations. We created and empirically tested a structural model on a sample of 149 Italian SMEs. We found that both traditional and digital communication have a significant direct impact on communication performance. This study's main limitation concerns his focus on a single European country. The research is a work in progress.

Managerial implications. The research results suggest entrepreneurs in this sector to invest in effective communication as it impacts positively and significantly on communication performance, especially in traditional communication. European and national policymakers should support micro and small firms with marketing training and the recruitment of young personnel with digital marketing skills.

Future research should investigate a larger sample of firms, and identify how each communication tool impacts

communication goals and qualitative research is also required. In particular, it could be interesting to identify best practices for effective communication in the Agri-food sector.

Originality of the paper. This is the first study, to our knowledge, that empirically investigates the relationships between communication of food security and communication performance in the Agri-food sector.

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Leveraging Italianness abroad: A corpus-assisted discourse approach to restaurant branding

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Abstract

Brands are carriers of meanings, shaping consumers' perceptions while influencing their behavior through discourse. This study examines restaurant branding from a discourse perspective, specifically focusing on Italian restaurants in Miami-Dade County, Florida, United States. Through a corpus-assisted discourse approach (CADS), the study investigates the use of the "Italianness" tactic in these restaurants' digital brand positioning strategy. Findings reveal that restaurants employing this tactic create highly humanized brands, conveying values such as authenticity, tradition, and high-quality ingredients, among others. This study aims to contribute to existing research at the intersection of branding and discourse while raising awareness among hospitality professionals about the impact that a discourse-based brand strategy and the semiotic power of food on consumer behavior.

Keywords: *hospitality; strategic communication; marketing; digital branding; digital discourse; CADS*

Framing of the research. *Contemporary society is deeply influenced by brands, as they shape cultural, economic, and social practices (Schroeder, 2009). Branding involves and is grounded in discourse (Fitchett & Caruana, 2015), defined by Fairclough (2015) as "a way of construing aspects of the world associated with a particular social perspective" (p. 87). Companies rely on discourse to communicate with the world at large, both internally (e.g., with employees) and externally (e.g., with consumers) (Breeze, 2013). From a marketing perspective, discourse is crucial in brand positioning, described by Keller & Swaminathan (2020) as "the heart of marketing strategy" (p. 47). Effective brand positioning entails understanding the target consumers and recognizing key competitors to find the proper location both in the minds of consumers and in the market, making the brand positively identified and differentiated.*

In today's digital world, companies rely on corporate websites to establish their online presence on the Web, influence their audiences, and mediate meanings. Just as physical stores utilize display windows and store design to influence consumer perceptions, so in cyberspace, website visitors form their image of the brand based on the content, design, and organization of the website (Breeze, 2013). Despite today's widespread use of social media, official websites are still regarded as the most important and reliable communication channels for marketing, playing a key role in brand positioning and the subsequent brand image formation, thus influencing consumer behavior (Hallett & Kaplan-Weinger, 2010; Wu, 2018; Yu et al., 2023). More specifically, the "about us" webpage of a corporate website is a pivotal tool for brand positioning (Breeze, 2013), as it is the specific website section where companies disseminate their brand identity. Notably, with advancements in technology, the "about us" content may be found either in its dedicated section of the website, directly embedded in the homepage, or in both locations simultaneously.

In the context of the restaurant business, which is the focus of this paper, digital discourse on restaurant websites includes a food storytelling based on the rhetoric between a specific culture and its culinary rituals (Burton, 2016), which is at the core of restaurant branding. This discourse shapes, in the minds of consumers, positive images of the restaurant products/services, as well as of the restaurant as a company. Consumers are more willing to choose well-known brands with positive attributes, which consequently are perceived as commitments to quality (Dabeva, 2012).

A significant segment of the food and beverage industry worldwide is represented by Italian cuisine. The current globalization processes and Italians' migratory movements have contributed to the global spread of Italian cuisine, as witnessed by the Italian restaurants distributed all over the world (Giampiccoli, 2017). The "Made in Italy" brand evokes attributes in the minds of consumers that positively characterize the perception of Italian products and the image of Italy (Cappelli et al., 2017; Temperini et al., 2016). The relationship between Italy and food is a symbiotic and culturally deep bond; Italy's intricate and illustrious culinary heritage has not only played an integral role in shaping the nation's cultural identity, but it has also left an indelible mark on the global food and beverage landscape. Rooted in centuries of history and regional diversity, Italian cuisine is a fundamental trait of Italianness (Bandini & Corduas, 2019).

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Discourse investigations of Italianness in the food and beverage industry remain relatively limited. Federici & Bernardelli (2016) carried out a cultural analysis of food discourse in advertising, focusing on how Italian food products are promoted to U.S. consumers and how Italian sounding products are presented in this context. The work edited by Naccarato et al. (2017) examined how representations of Italian food and foodways shape specific ideologies about Italy and Italian culture across different media. Corrizzato (2018) analyzed the promotional representation of made-in-Italy products, focusing on the official websites of Italian wineries. Guzzo & Gallo (2019) investigated Italianness in migration contexts and corporate discourse in food-related practices by analyzing Anglo-Italian food and beverage business managers' replies to negative online reviews. Nichele (2019) and Bandini & Corduas (2019) explored consumer perceptions of Italian restaurants abroad and the image of Italianness held by consumers.

More recent studies have focused on celebrity chefs' food discourse, considering that "chefs have achieved the popularity and status of superstars, as perhaps only pop music singers and actors had in the past" (Rossato, 2022, p. 11). In this regard, Rossolatos (2020) examined how Italy's place brand and Italianness are discursively articulated, (dis)placed, and appropriated in British celebrity chef Jamie Oliver's travelogues. Irimiás & Volo (2022) scrutinized Italian celebrity chef Massimo Bottura's online food discourse, with respect to pro-environmental behavior. Rossato (2022) conducted a cross-cultural diachronic study of food television discourse, focusing on the discursive evolution of mainly British and Italian television cookery programs. Despite the significant relationship between discourse and branding, research within this framework, specifically focusing on Italian restaurants abroad, is still scarce. As little attention has been dedicated to the analysis of the digital brand positioning strategy of Italian restaurants abroad and their use of digital discourse, the present work aims to contribute to filling this gap by focusing on Italian restaurants in Miami-Dade County, Florida, United States (hereafter Miami).

Florida has emerged as a prominent culinary destination, boasting a vibrant and diverse food and beverage scene. Its official destination marketing organization (DMO), Visit Florida, has engaged in marketing efforts with partner DMOs in the state, along with the prestigious Michelin Guide, to collectively promote Florida as a world-renowned culinary destination (Michelin North America, 2021; Visit Florida, 2023). Florida's food and beverage landscape is particularly vibrant in Miami, which has been granted the title of "2023 Food City of the Year" by the esteemed food and beverage publication *Bon Appétit* (Greater Miami Convention & Visitors Bureau, 2023). Miami indeed offers a unique fusion of flavors and culinary traditions that captivate both residents and visitors alike. Italian restaurants in Miami are a significant segment of its food and beverage industry: in February 2024, TripAdvisor recorded the presence of 430 restaurants offering Italian cuisine in Miami out of a total of 6,077 establishments.

Purpose of the paper. This paper is part of a wider ongoing research project, aiming to explore digital branding in hospitality and tourism from a discourse perspective. The project involves collaboration among the University of Palermo (Italy), Florida International University (United States), and Greater Miami Convention & Visitors Bureau (United States).

The purpose of this study is to investigate digital branding in the context of Italian restaurants abroad. Specifically, by focusing on Italian restaurants in Miami, the study examines the use of the Italianness tactic (i.e., emphasizing the Italian brand identity) in the restaurants' strategy of digital brand positioning. The digital discourse used by the restaurants on their corporate websites is analyzed through a corpus-assisted discourse approach.

Methodology. The methodological framework at the core of this paper is Corpus-Assisted Discourse Studies (CADS) (Baker, 2023; Partington et al., 2013), which draws upon the triangulation of Corpus Linguistics (CL) (Brezina, 2018; McEnery & Hardie, 2011) and Critical Discourse Studies (CDS) (Wodak & Meyer, 2015). In CADS research, statistical techniques and software tools are utilized for the collection and analysis of corpora (i.e., large electronic sets of textual data), while adopting a critical stance for a more in-depth analysis of textual data embedded in their co-text and social context. On the one hand, CL provides objective results that reduce the researcher bias. Indeed, "an association between two words, occurring repetitively in naturally occurring language, is much better evidence for an underlying hegemonic discourse which is made explicit through the word pairing than a single case" (Baker, 2023, p. 16). On the other hand, CDS "incorporates critical thoughts into their meaning construction and examines texts together with a broad social context" (Qian et al., 2018, p. 527). Both the computational and the human-led investigations of data are pivotal in CADS research.

In February 2024, Italian restaurants in Miami were surveyed on TripAdvisor, resulting in a population of 430 Italian restaurants out of a total of 6,077 restaurants in Miami. For the purpose of this paper, the label "Italian restaurants" specifically refers to those classified as Italian by TripAdvisor because they offer Italian cuisine. From this initial population of 430 Italian restaurants, a systematic sampling approach yielded a sample of 215. However, 78 restaurants were excluded from the sample due to the unavailability of their corporate websites, resulting in a final sample size of 137 restaurants. Each restaurant's website was meticulously examined by focusing on its homepage and "about us" webpage. This process identified the restaurants employing the Italianness tactic within their digital brand positioning strategy and those which do not employ the tactic. Furthermore, close reading and manual data extraction guaranteed the collection of specific textual data related to the "about us" content and the food storytelling. The textual data extracted from each website were compiled into individual text files, resulting in a one-to-one correspondence between the websites and the text files. Two corpora, whose features are displayed in Table 1, were created by means of #LancsBox (Brezina et al., 2021). The same software was used to analyze the corpora.

Table 1 Corpora features

Corpus	Restaurants	Files	Tokens	Types
corpus_a	Italian restaurants employing the Italianness tactic	91	31,704	5,042
corpus_b	Italian restaurants not employing the Italianness tactic	46	8,928	2,387

A keyword analysis was conducted to investigate the use of the Italianness tactic in the digital brand positioning strategy of the restaurants included in corpus_a. Keyword analysis involves comparing a corpus of interest against a baseline reference corpus, by using a statistical measure, to identify words that occur either more frequently (i.e., positive keywords) or less frequently (i.e., negative keywords) in the corpus of interest when compared to the reference corpus. Corpus_a was chosen as the corpus of interest and corpus_b as the reference corpus, while Cohen's *d* was utilized as the comparison statistic to measure keyness. A threshold of $s \geq 0.35$ was set, considering the standard interpretation of this effect size measure (Cohen, 1988), which is reported in Table 2. Setting a threshold of $s \geq 0.35$ indicates a focus on identifying keywords with a moderate or higher effect size, which implies a substantial difference in occurrence between the two corpora. In other words, this choice produced keywords that demonstrate a noticeable difference in language usage between corpus_a and corpus_b. Additionally, absolute frequency and the coefficient of variation were utilized to analyze keyword frequency and dispersion, respectively. Both positive and negative keywords were further investigated through concordance analysis, which involves the investigation of keywords embedded in their co-text. Out of the 63 positive keywords identified, 5 were omitted due to lacking semantic relevance. Similarly, out of the 38 negative keywords, 7 were excluded from the analysis. Subsequently, both positive and negative keywords were classified by discourse category, semantically grouped by topic, and analyzed in relation to their social context.

Table 2 Cohen's *d*: Standard interpretation of effect size

Effect	Cohen's <i>d</i>
Small	0.2
Medium	0.5
Large	0.8

Results. The positive keywords identified in the analysis reveal how restaurants in corpus_a employ the Italianness tactic in their digital brand positioning strategy. Conversely, negative keywords, occurring less frequently in corpus_a but more frequently in corpus_b, are particularly useful for contrasting the two corpora. The analysis revealed keywords belonging to four discourse categories: corporate, food, ideological, and persuasive discourse. Table 3 below shows the keywords characterizing the corporate discourse of Italian restaurants in Miami. In corpus_a, emphasis is placed on the commitment of restaurant staff, highlighting qualities such as cure, passion, dedication, and professionalism. Furthermore, restaurants employing the Italianness tactic often share a history rooted in the migration of past generations from Italy to the United States, often stressing their status as family businesses. In contrast, corpus_b addresses corporate social responsibility (CSR) issues and emphasizes customer benefits, such as time and cost efficiency. Both corpora share keywords related to corporate mission and establishment type. In corpus_a, the corporate mission focuses on addressing customer needs and providing support, while in corpus_b, it emphasizes ensuring customer satisfaction. Keywords defining the types of establishment include "trattoria" in corpus_a and "bar" in corpus_b. The former suggests the idea of a small restaurant serving traditional, home-style dishes, while the latter indicates a potential focus on beverages and lighter food offerings.

Table 3 Keywords of corporate discourse

Keyword	Topic	Cohen's <i>d</i>	Frequency corpus_a	Dispersion corpus_a	Frequency corpus_b	Dispersion corpus_b
passion	commitment	0.47	34.00	2.10	1.00	6.71
dedication	commitment	0.43	11.00	3.27	0.00	0.00
dedicated	commitment	0.38	10.00	3.70	0.00	0.00
curated	commitment	0.37	18.00	3.06	1.00	6.71
passionate	commitment	0.37	8.00	3.79	0.00	0.00
professional	commitment	0.35	8.00	4.06	0.00	0.00
trattoria	establishment	0.42	20.00	3.35	0.00	0.00
moved	history	0.38	7.00	3.77	0.00	0.00
family	history	0.36	110.00	1.56	14.00	2.72
spread	history	0.36	6.00	3.97	0.00	0.00
father	history	0.36	6.00	3.92	0.00	0.00
needs	mission	0.37	9.00	3.83	0.00	0.00
help	mission	0.35	7.00	3.99	0.00	0.00
...
offer	mission	-0.55	26.00	2.55	17.00	-1.66
industry	mission	-0.37	1.00	9.49	4.00	-3.54
satisfaction	mission	-0.36	1.00	9.49	3.00	-3.81
Pickup	benefit	-0.47	1.00	9.49	5.00	-2.95
easy	benefit	-0.41	2.00	7.00	6.00	-3.24
save	benefit	-0.39	2.00	6.72	5.00	-3.25
money	benefit	-0.38	1.00	9.49	4.00	-3.38
curbside	benefit	-0.37	0.00	0.00	3.00	-3.79
credit	benefit	-0.37	0.00	0.00	3.00	-3.79
deals	benefit	-0.35	0.00	0.00	4.00	-4.04
easier	benefit	-0.35	0.00	0.00	4.00	-4.08
convenience	benefit	-0.35	1.00	9.49	3.00	-3.83
community	CSR	-0.40	10.00	3.68	10.00	-2.79
bar	establishment	-0.36	18.00	3.05	19.00	-2.56

The keywords related to food discourse are presented in Table 4. Both corpora contain keywords pertaining to food types, restaurant location, and restaurant offerings. Typical Italian foods such as “pasta” and “desserts” are prominent in corpus_a, while typical American foods like “burger” and “fries” characterize corpus_b. Interestingly, the keyword “pizza” is not among the positive keywords in corpus_a, despite its cultural association with Italian cuisine. A collocation analysis could provide further insights into its discursive use. Within the topic of food types, the keyword “white” is used to qualify specific foods, such as wines, truffle, and onion.

Concerning location, corpus_a emphasizes an elegant experience, while corpus_b focuses on the lounge area, aligning with the idea conveyed by the keyword “bar” in corporate discourse. Both corpora highlight the dining experience in the open-air areas of the restaurants, as the keywords “outside” and “outdoor” indicate.

With regard to the restaurant offerings, the keyword “list” refers to the list of wines offered by the restaurants. The keyword “event” indicates that restaurants in corpus_a position a niche-oriented brand, offering specific types of events (e.g., artistic, philanthropic, sportive, private, etc.). In contrast, the keywords “breakfast” and “power” (the latter referring to power business lunches) suggest that restaurants in corpus_b focus on practical and everyday dining options to cater a broader audience, including business professionals among others.

Additionally, while corpus_b features dietary options as a key element, corpus_a relies on the narrative of food preparation, which enhance customer trust and loyalty, increase perceived value and quality, educates customers about culinary techniques and ingredients, and creates emotional connection by humanizing the brand.

Table 4 Keywords of food discourse

Keyword	Topic	Cohen's d	Frequency corpus_a	Dispersion corpus_a	Frequency corpus_b	Dispersion corpus_b
desserts	food type	0.53	21.00	2.37	1.00	6.71
pasta	food type	0.48	78.00	1.82	4.00	3.62
meat	food type	0.44	13.00	3.20	0.00	0.00
white	food type	0.40	9.00	3.57	0.00	0.00
cheese	food type	0.39	20.00	3.42	1.00	6.71
pastas	food type	0.39	25.00	2.93	1.00	6.71
list	restaurant offering	0.46	19.00	2.48	2.00	4.87
event	restaurant offering	0.37	24.00	3.13	1.00	6.71
prepare	food preparation	0.39	11.00	3.66	0.00	0.00
cooked	food preparation	0.38	13.00	3.68	0.00	0.00
elegance	restaurant location	0.39	10.00	3.60	0.00	0.00
outside	restaurant location	0.35	10.00	4.00	0.00	0.00
...
breakfast	restaurant offering	-0.47	1.00	9.49	10.00	-2.69
options	restaurant offering	-0.46	12.00	3.08	16.00	-2.33
power	restaurant offering	-0.37	0.00	0.00	7.00	-3.84
lounge	restaurant location	-0.38	2.00	6.77	9.00	-3.50
outdoor	restaurant location	-0.36	10.00	3.49	12.00	-2.94
fries	food type	-0.38	1.00	9.49	4.00	-3.48
burger	food type	-0.35	0.00	0.00	5.00	-3.99
...
pizza	food type	-0.33	209.00	1.89	76.00	-1.67

Table 5 below displays the keywords pertaining to ideological discourse. In corpus_a, a set of cultural values integral to Italianness is evident, defining Italian cuisine and recipes as authentic and traditional, and emphasizing the value of sharing the dining experience with friends and family. Conversely, corpus_b does not exhibit keywords conveying cultural values. Both corpora share topics related to the origin and quality of food ingredients and products, although in an unbalanced manner (i.e., 11 keywords in corpus_a and only 2 keywords in corpus_b). In corpus_a, ingredients and products are imported from Italy, with an emphasis on the regional dimension of Italian cuisine, particularly from the South. On the other hand, corpus_b features local ingredients and products. Additionally, restaurants in corpus_a highlight the high quality of their imported ingredients and products, while those in corpus_b emphasize that theirs are not frozen.

Table 5 Keywords of ideological discourse

Keyword	Topic	Cohen's d	Frequency corpus_a	Dispersion corpus_a	Frequency corpus_b	Dispersion corpus_b
italian	origin	1.26	409.00	0.87	17.00	2.21
italy	origin	1.10	96.00	1.26	1.00	6.71
neapolitan	origin	0.43	43.00	2.93	1.00	6.71
imported	origin	0.40	14.00	3.14	1.00	6.71
bolognese	origin	0.40	8.00	3.58	0.00	0.00
italy's	origin	0.39	7.00	3.67	0.00	0.00
southern	origin	0.36	7.00	3.94	0.00	0.00
traditional	cultural value	0.66	65.00	1.79	2.00	4.99
authentic	cultural value	0.62	87.00	1.40	7.00	3.53
cuisine	cultural value	0.54	77.00	1.45	11.00	3.02
tradition	cultural value	0.54	31.00	2.60	0.00	0.00
traditions	cultural value	0.53	27.00	2.54	1.00	6.71
recipes	cultural value	0.46	44.00	2.13	2.00	5.01
sharing	cultural value	0.40	9.00	3.55	0.00	0.00
finest	quality	0.48	17.00	2.92	0.00	0.00
freshest	quality	0.46	12.00	3.05	0.00	0.00
highest	quality	0.37	22.00	3.18	3.00	4.00
selected	quality	0.37	7.00	3.84	0.00	0.00
...
frozen	quality	-0.36	1.00	9.49	5.00	-3.79
local	origin	-0.35	29.00	2.94	17.00	-2.25

The keywords of persuasive discourse are listed in Table 6 and categorized by rhetorical techniques. The following rhetorical devices were identified by Dann (1996) in his investigation of promotional discourse in tourism settings: euphoria, testimony, comparison, languaging, and ego-targeting. Ethos was deeply explored by Breeze (2013), while call to action is typical of the AIDA model (Lewis, 1899, as cited in Manca, 2016; Strong, 1925). Both corpora share euphoria, comparison, and call to action. Euphoria is a property of promotional discourse, involving the use of positive and glowing terms to create a positive frame of what is promoted (e.g., “acclaimed” and “celebrated” in corpus_a; “delicious” and “refreshing” in corpus_b). Comparison uses metaphors and similes to create vivid mental images and evoke emotional connections (e.g., “feed both your appetite and soul” in corpus_a; “just like my Grandma used to cook” in corpus_b). Call to action employs imperatives, whose pragmatic function is not that of giving orders but to encourage consumers to participate in a specific brand experience (e.g., “join us in celebrating Italian cuisine in Miami” in corpus_a; “try some of the local top dishes” in corpus_b). Restaurants in corpus_a position themselves as part of a collective, with prominent figures such as founders and chefs taking center stage. This technique strengthens the corporate ethos (Breeze, 2013) and enhances credibility. Consumers often perceive a group entity as more established and trustworthy compared to an individual one. Additionally, restaurants in corpus_a leverage external validation to bolster a positive image by employing the testimony technique. They showcase, on their websites, the positive reviews written by customers on social media, as showed by keywords reflecting the sentiments of satisfied customers. Furthermore, the rhetorical technique of languaging is evident in corpus_a, utilizing foreign (i.e., Italian) words to evoke exotic qualities associated with products or dishes. A rhetorical technique characterizing corpus_b is ego-targeting, aimed at enhancing audience engagement through direct forms of address.

Table 6 Keywords of persuasive discourse

Keyword	Technique	Cohen's d	Frequency corpus_a	Dispersion corpus_a	Frequency corpus_b	Dispersion corpus_b
group	ethos	0.46	22.00	2.84	1.00	6.71
chefs	ethos	0.42	17.00	2.95	1.00	6.71
founder	ethos	0.36	7.00	3.98	0.00	0.00
chef	ethos	0.35	59.00	2.02	9.00	3.22
truly	euphoria	0.46	15.00	3.05	0.00	0.00
well	euphoria	0.41	40.00	2.07	5.00	3.01
acclaimed	euphoria	0.35	9.00	4.08	0.00	0.00
celebrated	euphoria	0.35	7.00	4.06	0.00	0.00
wonderful	testimony	0.41	15.00	3.44	0.00	0.00
loved	testimony	0.40	10.00	3.55	0.00	0.00
attentive	testimony	0.35	8.00	4.04	0.00	0.00
brings	comparison	0.38	10.00	3.75	0.00	0.00
soul	comparison	0.35	9.00	4.01	0.00	0.00
di	languaging	0.42	38.00	3.35	0.00	0.00
join	call to action	0.41	19.00	2.67	1.00	6.71
...
try	call to action	-0.42	15.00	2.83	14.00	-2.46
order	call to action	-0.40	14.00	3.13	15.00	-2.32
refreshing	euphoria	-0.46	0.00	0.00	5.00	-3.10
delicious	euphoria	-0.43	51.00	2.16	20.00	-1.88
top	euphoria	-0.36	19.00	3.07	12.00	-2.45
your	ego-targeting	-0.38	139.00	1.52	56.00	-1.31
you'll	ego-targeting	-0.35	2.00	7.05	5.00	-3.88
like	comparison	-0.36	31.00	3.45	22.00	-2.19

In conclusion, the analysis reveals significant insights into the digital brand positioning strategy of Italian restaurants in Miami. The Italianness tactic shows four different discourse categories, which emphasize Italian values in corporate, food, and ideological contexts, while relying on specific rhetorical techniques. The restaurants employing the Italianness tactic position strongly humanized brands, conveying values such as authenticity, tradition, and high-quality ingredients.

Research limitations. One limitation of the paper is that it solely focuses on data extracted from corporate websites. This narrow focus may overlook valuable insights that could be gained from other sources, such as social media. A more comprehensive approach incorporating diverse data sources could provide a richer understanding of restaurant branding practices. Moreover, the paper focuses particularly on Italian restaurants in Miami, which may not represent the economic and cultural conditions of other food and beverage businesses and locations.

Another limitation arises concerning the nature of the data since the analysis relies exclusively on textual data. A multimodal analysis of the discourse employed online by Italian restaurants abroad would undoubtedly yield more insightful and accurate findings about their branding practices.

Managerial implications. Overall, the paper informs businesses, particularly Italian restaurants abroad, about the pivotal role of discourse in shaping a positive brand image online.

The work highlights the importance of corporate websites as crucial digital platforms to increase customer loyalty and differentiation in a competitive market. By paying attention to the content, design, and organization of their websites, with a special focus on the “about us” section, restaurants can create a strong online presence and positively influence consumer perceptions. The four identified discourse categories suggest that restaurants can leverage storytelling and narrative techniques to strategically communicate their brand messages. Additionally, by considering the cultural and social dimensions of food, restaurants can tailor their brand strategies with specific culture-based tactics to better engage with their target audiences and create meaningful connections.

Originality of the paper. The paper is strongly interdisciplinary, both theoretically and methodologically, encompassing the disciplines of Management and Organization Studies, Statistics, and Linguistics. By focusing on the

role of discourse in branding practices, the work highlights an original framework to investigate strategic communication. The originality of the paper lies, above all, in its methodology, especially in its application in business contexts. As a matter of fact, the uptake of CADS within the field has not been particularly fervent. Instead, the literature shows an abundance of works relying on exclusively-quantitative forms of textual analysis, which present some significant limitations (Gillings et al., 2024). On the one hand, they often overlook how language shapes perceptions of the world, ignoring issues of meaning. On the other hand, they assume that words operate independently from their co-text and social context, whereas CADS considers these factors as crucial to understand the construction of meaning through language. CADS facilitates both a broad overview of the entire corpus and a detailed examination of subtle linguistic nuances, thus allowing the transition between a macroscopic and microscopic analysis of the data within the same interface. Throughout the investigation, continuous access to the complete documents within the corpus is maintained, using software tools that are relatively user-friendly in terms of IT proficiency required for their use. The application of this methodology in business contexts can be particularly insightful for strategic communication research and practice.

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Strategic Agility in Error Management: Bridging Theory and Practice in Strategic Communication

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Abstract

Errors put firms' capabilities to critical tests. The present research delves into the role of strategic agility in the pursuit of effective error management strategies. By integrating strategic agility and error management literature, the analysis illuminates on how resource fluidity, leadership unity and strategic sensitivity are key in each phase of error management strategies, encompassing error detection, error communication, and damage control. Through a historical analysis, the present study examines the Samsung's strategic moves post the Galaxy Note 7 malfunctions reported by various consumers in August 2016. The study reveals that the three core components of strategic agility indeed facilitated the Samsung's recovery from the initial error. The findings extend strategic agility discourse beyond prompt adjustments to the external environment, highlighting its potential in proactive internal error management. Framing strategic agility as a response mechanism to an internal error, this study underscores the necessity of cultivating the three capabilities associated with strategic agility to be prepared to effectively cope with an error, offering a novel perspective on how to firms can deal with an error and how to navigate crisis periods sometime activated by such an error. In this perspective, the present study sheds lights on the nexus between theory and practice in strategic communication, providing insights on how strategic agility can foster an organizational culture that openly cope with an error through tailored actions and consistent communication strategies.

Key words: error management; strategic agility; strategic communication; error detection; error communication; damage control.

Framing of the research. *This research is situated at the intersection of error management and strategic agility literature. Error management literature suggests that the way organizations perceive, handle, and learn from an error is crucial to their adaptability and performance (Akgün et al., 2022; Lei and Naveh, 2023). Central to this debate is the idea that an error, while sometimes inevitable (and sometimes not even promptly recognized as such), can be managed, and possibly open valuable learning opportunities (Frese and Keith, 2015; Van Dyck et al., 2005).*

As error management scholars identified, there exist three main phases characterizing an effective error management strategy: error detection, error communication, and damage control (Frese and Keith, 2015; Lei and Naveh, 2023). Specifically, once an error occurred, error detection is the first phase in the error management process. This phase is critical as an undetected error cannot be corrected or learned from. Effective error detection mechanisms include monitoring systems, regular audits, and a culture that encourages reporting without fear of punitive consequences. The literature emphasizes the importance of creating an organizational climate that supports vigilance and openness, facilitating the early detection of an error (Edmondson, 1999; Tucker and Edmondson, 2003).

After that an error is detected, the next phase is error communication, which involves the dissemination of information about the error to relevant stakeholders of the organization. Effective communication ensures that the error is understood and that corrective actions can be taken. This requires clear channels of communication and a culture that values transparency over blame. Research highlights the role of psychological safety in promoting open dialogue about an error, enabling teams to address and resolve issues more effectively (Edmondson, 2004).

Damage control includes the actions taken to mitigate the negative consequences of an error. In this phase, firms undertake immediate corrective actions to rectify the identified error and prevent its reiteration. Damage control often involve analyzing the root causes of an error, implementing changes to processes or systems, and providing training or resources to avoid similar errors in the future. In this perspective, the literature underscores the importance of resilience and adaptability in this phase, as organizations must quickly adjust to correct an error and minimize its impact (Desjardine et al., 2019; Weick and Sutcliffe, 2007).

From a holistic management perspective, it is evident that firms entering error management strategies should be equipped with multiple capabilities to effectively cope with an error. For example, during the error detection phase, firms should be capable to rapidly address possible stakeholder concerns, to reallocate resource functionally, and to deliver consistent messages to their audience, indicating a shared concern for an incurred error. As well, management should

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prove internal cohesiveness during the other two phases of error management strategies, while remaining sensitive toward the issue, for example regularly updating them on the error management progresses. Moreover, beyond inspecting the nature of the error, which can thus require resource mobilization, resource demanding activities for supporting key stakeholders and internally reconfigure may be necessary.

Consistently, the present study argues that firms willing to effectively cope with an incurred error should possess the three capabilities related to strategic agility. Strategic agility is increasingly recognized as a central tool for firms operating in dynamic and uncertain environments (Doz, 2020; Doz and Kosonen, 2008). This concept encompasses a firm's capacity to swiftly adapt, pivot, or realign its strategic directions and operational processes in response to emerging challenges and opportunities (Doz and Kosonen, 2008; 2010). Strategic agility necessitates the activation of response mechanisms to changes in external business landscape, coupled with an internal capability to enact change efficiently and effectively. The literature conceptualized strategic agility around three meta-capabilities: strategic sensitivity, leadership unity, and resource fluidity (Doz and Kosonen, 2010; Fourné et al., 2014; Tarba et al., 2023; Weber and Tarba, 2014). Each of these capabilities plays a critical role in enabling a firm to navigate the complexities of a rapidly evolving business landscape.

Strategic sensitivity involves a firm's ability to perceive and interpret a situation with acuteness and accuracy (Doz, 2020; Tarba et al., 2023). This capability requires a robust process of continuous sense-making, where strategic insights are gleaned in real-time and used to inform decision-making. The development of strategic sensitivity hinges on fostering a prompt and fresh mindset within the organization, encouraging broad participation in the strategy process to leverage diverse perspectives. Leadership unity refers to the capacity of leadership to make rapid and cohesive decisions (Doz and Kosonen, 2010; Morton et al., 2018). This unity is crucial for overcoming the inertia and resistance that can plague decision-making processes, especially in times of uncertainty. Resource fluidity indicates the firm's agility in reallocating and reconfiguring its resources in response to changes (Heracleous et al., 2023; Doz and Kosonen, 2010). This capability is functional for enabling the organization to adapt its operational processes and business models swiftly. Resource fluidity is enhanced through flexible resource allocation processes, effective people management, and fostering a culture of adaptability.

Despite the established importance of strategic agility in enabling firms to adapt to external changes, there has been limited exploration of its role in internal error management. Error management is critical for organizational learning and resilience, yet the mechanisms through which strategic agility can enhance error correction remain underexplored. Indeed, the integration of strategic agility into error management strategies offers a promising avenue for research. For instance, strategic sensitivity can enhance a firm ability to detect an error early and respond proactively. By fostering an environment where insights and feedback are continuously gathered and analyzed, firms can identify potential errors before they escalate into more significant issues. Similarly, leadership unity is critical for effective error management. When an error is detected, swift and decisive action is often required to mitigate their impact. Leadership unity ensures consistent organizational signals to the outside, without being hampered by indecision or internal conflict. Finally, resource fluidity enables the organization to adapt its operations in response to an identified error. By reallocating resources efficiently, the firm can address the root causes of errors and implement changes to prevent their recurrence.

Purpose of the paper. The purpose of this paper is to critically assess the role of strategic agility in error management within strategic communication frameworks. It delves into how the three capabilities associated with strategic agility—strategic sensitivity, leadership unity, and resource fluidity—enhance error management across error detection, error communication, and damage control phases. Integrating strategic agility with the strategic communication debate, especially focusing on error management, the study sheds light on the significance of adept, adaptable responses and the role of communication strategies in error mitigation, spotlighting the necessity for organizations to swiftly detect, correct, and communicate an error to maintain stakeholder trust. This exploration offers insights into leveraging strategic agility for strategic communication efforts, advancing practices in dynamic environments and providing a holistic perspective on navigating strategic communication challenges.

Methodology. The applied methodological framework employs a multi-source triangulation approach, analyzing various archival and secondary data pertaining to Samsung's Galaxy Note 7 case. This encompasses an in-depth review of internal reports, press releases, news articles, and social media discourse, aiming to capture a comprehensive view of the case management. Integrating single case study methods (Eisenhardt and Graebner, 2007; Siggelkow, 2007; Yin, 2017), with an interpretive historical analysis (Foster et al., 2017; Vaara and Lamberg, 2016; Wadhvani and Decker, 2017), the study focuses on source analysis to deconstruct public narratives and media engagements related to the case. This strategy facilitates a nuanced examination of Samsung's strategic response, highlighting the firm leverage of strategic sensitivity, leadership unity, and resource fluidity in addressing the incurred error. The analysis is further enriched through discussions with academic and industry experts, ensuring a robust interpretation of the data. This methodological approach allows for exploring the intricate processes of error detection, public acknowledgment, and strategic recalibration employed by Samsung, thereby illuminating the role of strategic agility in coping with the error and initiating recovery.

As far as it regards the context for the analysis, key historical and technical details are reported as follow. In a notable event during August of 2016, Samsung, market leader in the mobile phone industry, unveiled the Galaxy Note 7 in New York. This launch was anticipated to further cement Samsung's dominant position in the smartphone innovation. However, the trajectory of the Galaxy Note 7 took an unforeseen downturn shortly after its release to the market on the 19th of August. By the 24th of August, the initial instance of the device exploding was reported, sparking significant safety concerns surrounding the product. The gravity of these concerns was intensified when, on the 29th of August, a video

showcasing a damaged Galaxy Note 7 circulated on YouTube, escalating public alarm over the issue. A statement from a Samsung representative disclosed that the distribution of the Galaxy Note 7 was being postponed conducting further quality assurance tests.

In response to these episodes, Samsung embarked on a global recall on the 2nd of September. This situation escalated with a formal recall in the U.S. on September 15, alongside a program for battery replacement. In the wake of a prohibition by the US Department of Transportation against the carriage of the Galaxy Note 7 on flights, Samsung deployed personnel to airports to assist consumers and collect the devices, aiming for a complete recall. Within a span of less than three months, the firm achieved a global return rate of 96 percent.

On October 10, 2016, Samsung formally acknowledged the critical nature of the issue, announcing a cessation of sales and a voluntary recall of the Galaxy Note 7. This action was supported by the involvement of regulatory bodies worldwide, including the U.S. Consumer Product Safety Commission, and major carriers ceased the sale and exchange of the device, prioritizing consumer safety. Samsung's statement to the Seoul stock exchange emphasized the decision to discontinue the Galaxy Note 7 was taken with consumer safety as the paramount concern. Also, Samsung launched a refund and exchange program in the U.S. on October 13, offering remedies to affected customers while maintaining transparent communication with its stakeholders.

The repercussions of this issue were manifested, for example, in a decline in the smartphone sales for the quarter ending December 31, 2016, as compared to the preceding quarter. Samsung's business report from December 31, 2016, reflects a commitment to prioritizing consumer safety and innovation, detailing the implementation of comprehensive safety measures and the establishment of a dedicated safety verification team to avert similar incidents.

The technical challenges that led to the Galaxy Note 7 safety incidents were fundamentally rooted in the lithium-ion batteries' design and manufacturing flaws. At the core of the issue were internal short circuits and the propensity for thermal runaway, conditions that can lead to overheating, combustion, or explosions in such batteries. Lithium-ion batteries, which consist of positive and negative electrodes separated by an electrolyte, rely on this architecture for energy storage and release. However, the compactness of this design leaves minimal margin for error, as any breach in the separator or the introduction of metal particles can create a direct electrical pathway between the cathode and anode. This can cause rapid heat generation, culminating in hazardous outcomes.

For the Galaxy Note 7, these safety risks materialized due to specific technical shortcomings in the batteries supplied by SDI and ATL. The SDI batteries were found to suffer from internal short circuits, potentially caused by damaged or deformed electrodes and overly long negative electrodes. These defects could lead to bending and breaching of the separator, facilitating a short circuit. Similarly, the ATL batteries were compromised by the absence of insulation tape and the presence of protruding weld points, which could also pierce the separator or exert excessive pressure, resulting in short circuits.

Subsequent efforts by Samsung to address the issue included a detailed technical report presented on January 23, 2017, which elucidated the battery-related causes of the Note 7 incidents. This report was part of Samsung's broader commitment to enhancing product safety, evidenced by the establishment of an 8-Point Battery Safety Check and the formation of a Battery Advisory Group to ensure ongoing evaluation and improvement of battery safety standards.

By March 31, 2017, Samsung had managed to recover its smartphone sales to levels surpassing those prior to the Galaxy Note 7 incident. The launch of the Galaxy Note 8 on September 15, 2017, signified a new phase for Samsung, characterized by a renewed focus on quality and safety, alongside strategic investments in safety technologies and brand repositioning efforts.

Results. Utilizing strategic agility as a response mechanism to cope with the Galaxy Note 7 case, Samsung displayed a multi-faceted approach to error management, structured around three pivotal phases: error detection, error communication, and damage control.

At the outset, during August 2016, Samsung exercised strategic sensitivity, rapidly acknowledging stakeholder concerns following the initial reports of the Note 7's safety issues. A swift decision to halt shipments for additional quality assessments reflected the firm's immediate concern for consumer safety and brand reputation. In parallel, Samsung demonstrated resource fluidity by reallocating financial and human resources to bolster quality control and enhance customer service capabilities, which was pivotal for the initial recovery process. Leadership unity was evident as Samsung delivered clear and consistent messages, reflecting a concerted signal of concern and a commitment to resolution.

In the subsequent phase, during September 2016, Samsung's strategic sensitivity was marked by the proactive implementation of recalls, signaling an acute awareness of consumer perspectives and a readiness to address their safety concerns. Resource fluidity was manifested in the logistical coordination of the product recall, including the mobilization of employees and rapid technical updates to mitigate risks. Leadership unity during this phase was characterized by a unified public response from executives, setting clear objectives for the recall and ensuring alignment across the firms' various departments and regions.

Samsung's actions during the damage control phase (October 2016 – September 2017) reflected an integrated application of strategic agility's core capabilities. Strategic sensitivity was observed in the regular updates provided to the public and the formation of a Battery Expert Advisory Group to advise on safety and innovation. Resource fluidity was demonstrated by the extensive mobilization of research and development teams and the reallocation of resources towards R&D and safety investments. Leadership unity was evidenced by the clear and transparent communication from

the top executives, the strategic reprioritization of the firm's objectives, and the concerted effort to enhance the brand's focus on quality and safety.

Throughout all the phases, Samsung's approach to error management was marked by a commitment to transparency, customer safety, and quality assurance. The integration of strategic agility enabled the firm to navigate the complexities of the issue effectively, ensuring that both the immediate response and the long-term strategic realignment were handled with precision. This case illustrates how strategic agility can be a response mechanism for managing an internal error, with each phase of the error management process benefiting from the three capabilities underpinning strategic agility, namely strategic sensitivity, leadership unity, and resource fluidity.

Research limitations. This study, while offering new insights from the integration of strategic agility literature into error management strategies, acknowledges a number of limitations. Firstly, the reliance on a single case study, although in-depth, may limit the generalizability of the findings across different industries and organizational contexts. Future research could address this by examining a broader range of cases across various sectors. Secondly, the historical analysis approach might not capture the real-time decision-making processes and the dynamism of strategic agility in action. Incorporating longitudinal studies or real-time tracking of strategic decisions could provide additional depth. Lastly, the focus on strategic communication as a mechanism for error management may overlook other critical factors such as internal dynamics that may also play significant roles in the strategy process.

Managerial implications. The findings of this study hold practical implications for practitioners aiming to enhance their firms' strategic agility and, accordingly, their error management strategies. Firstly, cultivating an organizational culture that prioritizes strategic sensitivity, leadership unity, and resource fluidity can significantly improve error detection, communication, and damage control processes. Managers should invest in systems and training that encourage open communication and swift response to an error. Secondly, the case of Samsung underscores the importance of a unified leadership approach in navigating the incurred error, suggesting that leadership development programs should emphasize agility, consensus-building, and strategic decision-making. Lastly, the study highlights the need for organizations to maintain flexibility in resource allocation, suggesting that managers should regularly review and adjust resource deployment strategies to support rapid response to an error and market changes. Implementing these strategies can help organizations to manage an error more effectively, and possibly turn potential crises into learning opportunities.

Originality of the paper. This paper contributes to the existing literature by integrating strategic agility with error management within the context of strategic communication. By focusing on the Samsung Galaxy Note 7 case, this study illustrates how strategic sensitivity, leadership unity, and resource fluidity can collectively enhance an organization's ability to manage an error effectively. Unlike previous research that primarily examines strategic agility in the context of external environmental adaptation, this study highlights its significance in internal error management and strategic communication. This original contribution extends the discourse on strategic agility and provides a nuanced understanding of its application in critical situations, offering insights for both scholars and practitioners in the field of strategic management.

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Track 11
Strategy & Governance

Do executive actions reflect their personality traits?: A review of organizational misconduct

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Abstract

This study endeavors to delve into the personality traits that contribute to ineffectual management practices within companies, concentrating specifically on key decision-makers such as CEOs and other top-tier management personnel. It is underpinned by two established theoretical frameworks: the Upper Echelon Theory and the Theory of Planned Behavior. Furthermore, this research adopts a meticulous approach to systematically gather, assess, and analyze existing knowledge, with the dual goal of establishing a thorough research agenda. Consequently, upon completion, this study promises to offer valuable insights for scholars, professionals, investors, policymakers, and stakeholders alike.

Keywords: irresponsible management, corporate misconduct, apical decision makers, systematic literature review, research agenda

1. Introduction

In a context of increasing emphasis on firms' commitment to a positive and sustainable impact on society, incidents of irresponsible management - defined as "activities and actions that organizational members engage in to deceive or swindle investors or other key stakeholders, including acts that violate laws or regulations or that are legal but considered morally wrong,

such as earnings management, financial statement or other accounting fraud, regulatory violations, actions that result in class action lawsuits, and anti-competitive actions, potentially harming firm stakeholders, eliciting negative reactions from those stakeholders, and being perceived as reasonably avoidable" (Neville et al., 2019; p. 2541) - generate always great perplexity. In the last decades, notable examples include Enron, Volkswagen, Boeing, Theranos, Wells Fargo, Lehman Brothers, WorldCom, France Telecom, Tyco International, Wirecard, Parmalat, FTX, Goldman Sachs and many others.

Comprehending why firms act irresponsibly poses a significant challenge. However, by examining the behavior of apical decision-makers (i.e., top managers, executives, and entrepreneurs), it is possible to gain valuable insights, as they hold the ultimate authority in resource allocation, shaping organizational culture, managing stakeholder relationships, setting strategic visions, handling risks, and addressing legal and ethical concerns. To do so, this article is grounded in the Theory of Planned Behavior (TPB) by Ajzen (1991), which posits that individuals' intention to pursue a specific action is influenced by their behavioral, normative, and control beliefs, moderated by skills and environmental constraints. Thus, grounding in TPB is helpful to engage in a comprehensive exploration of the various dimensions influencing apical decision-makers misconduct (i.e., psychological, behavioral, and socio-demographic factors), while also accounting for contextual elements such as culture, incentives, regulations, competition, board structure, and the role of other stakeholders.

Among the various dimensions under consideration, the psychological one presents the most challenging issues given its nature. Notably, within this complex realm, the enduring nature of personality traits makes them pivotal when dealing with the inclination towards misconduct. This holds because personality traits are "relatively stable, consistent, and enduring internal characteristics inferred from patterns of behaviors, attitudes, feelings, and habits in individuals [they prove] useful in summarizing, predicting, and explaining an individual's conduct" (American Psychological Association, 2023a). However, understanding and evaluating the role of personality traits face substantial theoretical and practical constraints. For instance, scholars encounter difficulties in directly assessing the personality traits of top decision-makers (Van Scotter, 2020), leading them to overemphasize easily accessible traits such as narcissism (Borgholthaus et al., 2023). Additionally, the lack of a clinical psychology background among these scholars (Van Scotter and Roglio, 2020) has resulted in the analysis of specific traits separately rather than as part of a complex biosychosocial system (Garcia, 2020).

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Despite these challenges, recent advancements in unobtrusive assessment techniques, such as videometric, paralinguistic, and text analyses (Petrenko et al., 2016; Harrison et al., 2019, Marrero et al., 2022), offer promising solutions for scholars to address and overcome these limitations, thus reinvigorating this field of research. Yet, these research avenues are not exempted from challenges and critical flaws, consequently, this paper aims to address the following research questions paving the way for future scholars: What is the role of personality traits as catalyst for apical decision-makers' irresponsible management? and What is the current state of knowledge in this field of research?

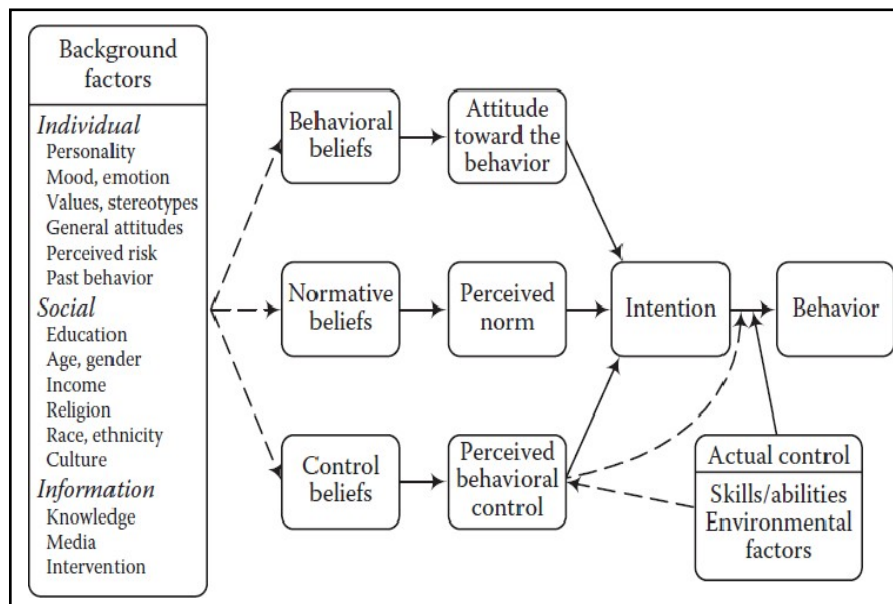
To tackle these questions, this study is based upon a systematic literature review (SLR) of 36 articles published between 2002 and 2023 providing a fine-grained assessment of the current knowledge on this field of research. Within the following sections, this study meticulously examines the theoretical underpinnings, elucidates the methodological approach, engages in a comprehensive discussion of the state-of-the-art literature, and formulates a research agenda.

2. Theoretical background

2.1 Theory of Planned Behavior

Grounded in social psychology, the Theory of Planned Behavior (TPB) (Ajzen, 1991; Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1980) posits that intention to perform a behavior stems from attitude, subjective norm, and perceived behavioral control (Ajzen, 1991, p. 188). Background factors indirectly shape intentions and behaviors (Ajzen & Fishbein, 2005; Ajzen, 2011), with TPB serving to elucidate these influences (Ajzen, 2020, p. 318).

Figure 1 Theory of Planned Behavior (Ajzen and Fishbein, 2005).



TPB's versatility is evident in its application to various management topics, including unethical decisions. Carpenter and Reimers (2005) studied managers' decisions to violate accounting standards, while Kulik et al. (2008) examined factors influencing ethical behavior. Cohen et al. (2010) linked individual managers' psychological aspects to fraud opportunities. Egor et al. (2022) used TPB to explore unethical practices among CEOs and crony directors.

2.2 The role of personality considering the Theory of Planned Behavior

Personality, a crucial determinant of intention, encompasses interconnected behavioral, cognitive, and emotional traits shaping individuals' adaptation to life (Ajzen, 2011; American Psychological Association, 2023b). These enduring patterns of thoughts, feelings, and behaviors influence how individuals perceive and respond to various situations (American Psychological Association, 2023a). Psychologists categorize these traits into broad factors like the Big Five or Dark Triad, understanding that individuals exhibit varying levels of each trait (Garcia, 2020). These trait configurations yield distinct cognitive, emotional, and social responses.

The Theory of Planned Behavior (TPB) offers a valuable framework for exploring the interplay between personality traits and behavioral outcomes. For instance, in organizational contexts, decision-makers high in conscientiousness tend to comply with rules due to their positive attitude towards them. Those high in extraversion may be swayed by normative influence, while those high in neuroticism may struggle with emotional regulation, impacting their behavior under stress. Studying personality traits associated with unethical management sheds light on the dark side of top management behaviors and their influence on corporate misconduct.

3. Methodology

3.1 Research design

To ensure a rigorous, transparent, and replicable review of existing knowledge, as well as to enhance the legitimacy of our findings, we opted for conducting a systematic literature review (SLR) (Tranfield et al., 2003). This methodological choice allows us to synthesize all relevant evidence, effectively mapping and evaluating the current intellectual landscape. This, in turn, enables us to refine existing theoretical foundations and develop an agenda to move ahead in this research domain (Fan et al., 2022).

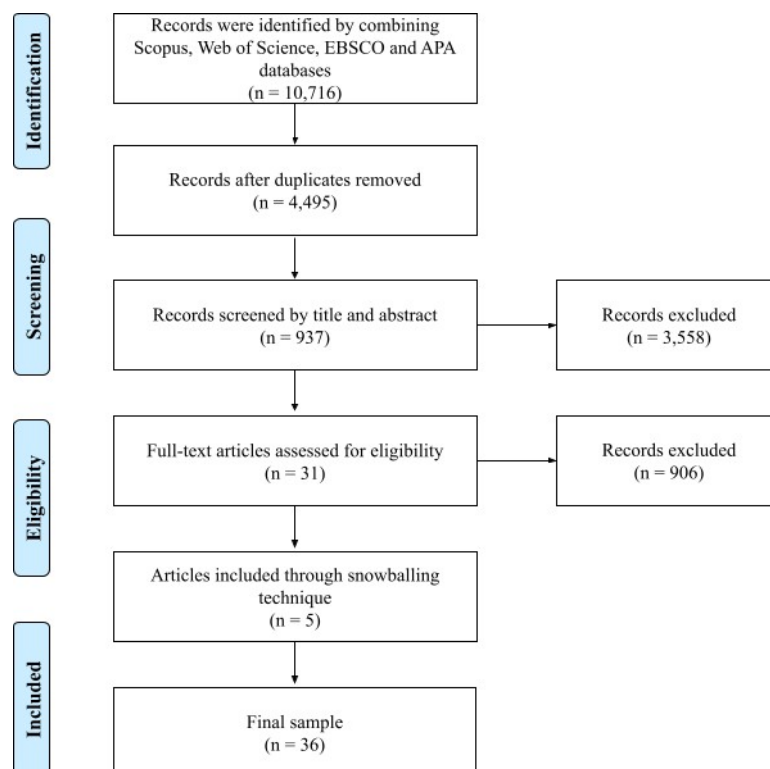
3.3 Article collection

By using the query string (see Table 1) we proceed with article collection. The flowchart illustrated in Figure 2 shows that the research began with a broad search across databases, yielding 4,495 articles in business, management, and accounting. After screening titles and abstracts, 937 relevant articles remained. Full-text examination, guided by strict inclusion criteria, narrowed the selection to 31 pertinent articles addressing corporate governance, organizational misconduct, and personality traits in top decision-makers, all peer-reviewed. Further scrutiny of referenced works identified four additional articles meeting the criteria, resulting in a final sample size of 36.

Table 1 Strings of keywords.

Area	Keywords
Corporate governance	“entrepreneur*”, “own*”, “found*”, “president*”, “direct*”, “lead*”, “senior*”, “executive*”, “Chief*”, “C*O*”, “CAO*”, “CCO*”, “CDO*”, “CEO*”, “CFO*”, “CIO*”, “CMO*”, “COO*”, “CRO*”, “CSO*”, “CTO*”, “top manage*”, “TMT*”, “board*”, “c suit*”, “c level*”, “upper echelon*”, “chair*”, “white collar*”
Personality traits	“personality trait*”, “personalit*”, “trait*”, “Machiavelli*”, “psycopath*”, “narcissis*”, “sadis*”, “sociopath*”, “darkpersonalit*”, “dark triad”, “dark tetrad”, “dark core”, “Mach IV”, “machiavellian personality scale”, “MPS”, “narcissistic personality inventory”, “NPI”, “hare”, “psychopathy checklist”, “PCL”, “self-report psychopathy”, “SRP III”, “conscientious*”, “agreeable*”, “neurotic*”, “extr?version*”, “big five”, “FFM”, “overconfiden*”, “antagonis*”, “antisocial*”, “deceit*”, “dishonest*”, “fraud*”, “assertive*”, “aversive*”, “impulsive*”, “manipulative*”
Business ethics	“abus*”, “bribery”, “cheat*”, “collusive*”, “corrupt*”, “crim*”, “deceit*”, “dishonest*”, “embezzl*”, “fraud*”, “gamb*”, “harm*”, “illegal*”, “immoral*”, “inside*”, “investigat*”, “irresponsib*”, “launder*”, “lawsuit*”, “manipulat*”, “negligen*”, “penal*”, “sanction*”, “scandal*”, “theft*”, “transgressi*”, “unauthoriz*”, “unethic*”, “violat*”, “wash*”, “whistleblow*”, “wrongdo*”

Figure 2 Papers’ collection strategy (Author’s own elaboration).



4. Results

4.1 Preliminary analyses

We followed the method by Caputo and Kargina (2022) to extract and merge the data regarding the 36 (34 articles and 2 reviews) contributions, enabling then an in-depth analysis using the Bibliometrix R package (Aria and Cuccurullo, 2017). By doing so it appeared that scholars' interests can be categorized into three clusters: those who focused on narcissism ($n = 22$; $\% = 61$), psychopathy ($n = 6$; $\% = 17$), and Machiavellianism ($n = 3$; $\% = 8$). It is noteworthy, however, that only the remaining five articles ($\% = 14$) addressed two or more personality traits simultaneously. This is significant, considering psychological literature emphasizes that individual behavior is not solely defined by a single personality trait but rather by a combination of various traits. This discrepancy highlights a crucial flaw in the management literature that needs to be addressed. Consequently, the rest of the article is structured as follows: first, we delve into each of the three clusters independently, and later, in the discussion section, we aim to fill this gap by presenting a more integrated and holistic examination of the literature.

4.2 Cluster analysis

4.2.1 Narcissism and corporate misconduct

The American Psychological Association Dictionary (2023c) defines narcissism as "excessive self-love or egocentrism". Within academic discourse, various perspectives on narcissism exist. Despite the American Psychiatric Association's (2013) classification of narcissism as a personality disorder, this article adopts the perspective put forth by Raskin and Hall (1979) and by Emmons (1987), treating it as a normal personality trait.

Among the scholarly articles that have dealt with narcissistic apical decision-makers, it is noteworthy to mention the contribution of Lubit (2002). He was among the first in management and business sciences to emphasize the need for identifying and addressing the potentially destructive effects of narcissistic behavior within the organizational hierarchy. Specifically, Lubit (2002) highlighted the importance for organizations to examine their cultural setting to prevent and discourage the presence of people with such characteristics.

A few years later, Chatterjee and Hambrick (2007) empirically demonstrated that narcissistic CEOs are naturally more inclined to make attention-grabbing decisions that may lead to either significant successes or tremendous failures. Specifically, CEOs' egocentrism represents a double-edged sword. For instance, narcissism can prompt apical decision-makers to invest in innovation, but it can also lead them to prioritize their interests over stakeholders' interests, compromising ethical and safety standards (Petrenko et al., 2016; Kashmiri et al., 2017).

In this vein, O'Reilly et al. (2018) unveiled the tendency of narcissistic CEOs to discount expert advice, making them more prone to risk-taking and intuitive decisions. This finding aligns with Li et al. (2022), who highlighted the correlation between prestigious awards and the propensity for financial misconduct among CEOs, indicating how their grandiose sense of superiority increases the likelihood of unethical or illegal behaviors. However, this latter conclusion is contradicted by Kalbuana et al. (2023) who identified a positive correlation between high CEO narcissism and a decrease in corporate tax avoidance.

4.2.3 Psychopathy and corporate misconduct

According to the 2023 edition of the American Psychological Association Dictionary, the term "psychopathy" is synonymous with antisocial personality disorder. It is defined as "a chronic and pervasive disposition to disregard and violate the rights of others. Manifestations include repeated violations of the law, exploitation of others, deceitfulness, impulsivity, aggressiveness, reckless disregard for the safety of self and others, and irresponsibility, accompanied by lack of guilt, remorse, and empathy". Despite the current identification by the American Psychological Association (2023d), the business and management literature predominantly refer to this phenomenon as "psychopathy" - consequently, to maintain consistency, this study will adopt the same terminology.

According to the information retrieved from the dataset, Clive R. Boddy is credited as the first to conceptualize the notion of "corporate psychopaths" in 2006. He underscored the necessity of investigating the influence of such individuals - who represent 1% of the world

population - on organizational misconduct, business sustainability, and corporate social responsibility. Adding to this discourse, Babiak et al. (2010) shed light on the capacity of psychopaths to manipulate others through their communication skills and charisma. These scholars specifically suggested that corporate psychopaths manage to progress in their careers despite exhibiting poor performance in the workplace.

This assertion was corroborated by Boddy et al. (2010), who highlighted that corporate psychopaths are more prevalent in senior positions within organizations. This suggests that individuals without conscience may be in control of significant corporate resources and may prioritize their self-interest over the organization and its stakeholders' interests. Boddy (2011) further posited that corporate psychopaths played a significant role in precipitating the 2007-2008 global financial crisis, which originated with a subprime mortgage lending crisis in 2007 and evolved into a global banking emergency when Lehman Brothers crashed into bankruptcy (Kenton, 2023).

This claim is also supported by Boddy et al. (2015), who empirically demonstrated that despite their short-term successes, corporate psychopaths' conduct is detrimental to the long-term prosperity of the organizations they oversee because they often engage in fraudulent activities as well as displaying bullying, fear-mongering, and manipulative behaviors - ultimately jeopardizing organizational outcomes. For instance, Boddy (2023) found that, due to their profound disregard for corporate social responsibility and their willingness to falsify environmental impact reports, corporate psychopaths are likely to engage in deceptive practices (e.g., unlawful disposal of toxic waste materials).

4.2.3 Machiavellianism and corporate misconduct

The American Psychological Association Dictionary (2023e) defines Machiavellianism as “a personality trait marked by a calculating attitude toward human relationships and a belief that ends justify means, however ruthless. A Machiavellian is one who views other people more or less as objects to be manipulated in pursuit of his or her goals, if necessary through deliberate deception”.

Among the scholarly articles that have studied the link between personality traits and apical decision-makers' inclination to misconduct, Machiavellianism has received less attention compared with narcissism and psychopathy. However, scholars have produced interesting results. For example, in their exploration of Chinese decision-makers, Al-Khatib et al. (2007) revealed a tendency for individuals high in Machiavellianism to resort to deceptive negotiation tactics, such as misrepresentation and false promises. Their inclination toward viewing negotiations as zero-sum games, can erode trust and cooperation, ultimately fracturing long-term relationships between organizations and their stakeholders.

Further shedding light on the link between Machiavellianism and unethical behavior, Kish-Gephart et al. (2010) emphasized how Machiavellian decision-makers tend to manipulate interpersonal relationships opportunistically, using deception and exploitation to serve their personal interests. This manipulation can extend to actions such as falsifying financial results,

deceiving shareholders, and engaging in other unethical practices to further personal gains, disregarding ethical standards and potentially causing harm to stakeholders.

Moreover, the study by Shafer and Lucianetti (2018) elucidated how Machiavellian apex decision-makers may exhibit resistance to sustainability and environmental responsibility reports. In fact, these individuals, by prioritizing immediate gains, might view such reports as a hindrance to short-term profits due to their focus on long-term investments. Additionally, these reports demand transparency and accountability, challenging the secretive nature and desire for control of Machiavellians. Changes associated with such initiatives could disrupt the status quo that serves their interests. Finally, implementing these reports would represent an emphasis on communal benefit over personal gain, which does not align with the self-serving nature of Machiavellian decision-makers.

5. Discussion and research agenda

This article explores the nexus between personality traits and the proclivity of top decision-makers towards misconduct. Through a systematic literature review (SLR), we highlight narcissism, psychopathy, and Machiavellianism as pivotal factors in fostering such inclinations, employing the Theory of Planned Behavior (TPB) (Ajzen, 1991) as a conceptual scaffold to elucidate their contributions to unethical behaviors.

Ajzen (1991) delineates the TPB's first determinant, attitude, as pivotal in shaping intentions. Decision-makers with grandiose narcissism often prioritize personal acclaim over ethics, facilitating misconduct (Li et al., 2022). Similarly, those high in psychopathy manipulate situations to their advantage, disregarding ethical standards (Boddy, 2023). Likewise, Machiavellian decision-makers exploit circumstances for personal gain, indifferent to potential harm (Kish-Gephart et al., 2010), suggesting a direct link between dark triad traits and unethical conduct.

The TPB's second determinant, subjective norm, underscores the influence of social pressure. Narcissistic leaders seek validation, sometimes resorting to misconduct (Kashmiri et al., 2017). Psychopathic decision-makers feign compliance while furthering self-interests (Boddy, 2023), fostering a culture that tolerates unethical practices (Shafer and Lucianetti, 2018), aligning with the dark triad's manipulation of norms.

Lastly, perceived behavioral control, the TPB's third determinant, reflects ease or difficulty in behavior execution. Narcissistic decision-makers exhibit high perceived control due to their inflated self-perception (Li et al., 2022). Similarly, psychopaths navigate situations effortlessly due to their manipulative skills (Boddy, 2011), as do Machiavellians, owing to strategic thinking (Al-Khatib et al., 2007), suggesting a positive correlation between dark triad traits and perceived control.

Despite synthesizing literature comprehensively, this study identifies significant gaps, including disproportionate focus on narcissism and challenges in measuring decision-makers' personalities. Hence, insights drawn from the SLR suggest avenues for future research (Table 2).

Table 2 Research agenda.

Future Research Avenues	
<i>CEOs... and not only</i>	Current research primarily focuses on CEO misconduct, but it's essential to also study other board members or founders. Organizations are rarely led solely by one person nowadays. Broadening research scope can provide a better understanding of how personality traits affect misconduct in firms.
<i>Angels vs Demons</i>	Understanding how "dark" executives influence board members and how "light" executives reduce misconduct risks remains unclear. Investigating potential selection bias in board turnover towards either "angels" or "demons" executives is intriguing. Exploring executive contagion, where personalities shift, offers valuable insights.
<i>V.I.P. (very important personality traits)</i>	Assessing top decision-makers has historically been challenging for scholars, often resorting to unreliable indicators like CEO picture size. New unobtrusive assessment techniques like videometric and text analyses are revolutionizing research. However, studies tend to analyze personality traits individually rather than within a comprehensive biopsychosocial framework.
<i>Even scholars need Heroes</i>	Business and management scholars should start collaborating more often with clinical psychologists and psychiatrists. This will allow not only to produce more robust results but also to implement additional and more sophisticated measures that are still uncommon in the business and management literature (e.g., the B-Scan which may allow to gain more nuanced insights into psychopathic strategies in the corporate world).
<i>See the full landscape</i>	Corporate misconduct is multifaceted and not solely attributable to personality traits. Understanding why top decision-makers engage in unethical behavior requires considering various factors at individual, group, industry, and macro levels. For example, tenured executives may exhibit overconfidence due to experience, while individuals from impoverished backgrounds may turn to fraud for financial security. Industry dynamics and regulatory loopholes also play significant roles. Integrating these perspectives is vital for a comprehensive understanding and effective prevention of corporate misconduct.
<i>Scandals echo through time</i>	While modern research methodologies have their own merits, the use of seemingly archaic approaches like historical case studies can offer unique insights. Investigating corporate misconduct through historical case studies yields valuable insights into recurring patterns in decision-making and regulatory flaws. By comparing similar instances over time, scholars can understand how apical decision-makers think, act, and react. The resulting knowledge will be beneficial also for policymakers to refine robust and adaptable legal measures to prevent corporate unethical or illegal behaviors.

Moreover, to advance research on why firms misconduct, there is a critical need to shift focus beyond the CEO and examine the roles of other key figures like other board members and founders. This includes investigating the interplay between executives with "dark" and "light" traits as well as addressing potential biases and heuristics behind the choice of pursuing unethical or illegal behaviors. Leveraging on advanced assessment tools such as videometric and text analyses can provide deeper insights as well as allowing scholars to stop dealing with personality traits separately rather than as part of a complex biopsychosocial system. To facilitate this, fostering collaborations between business scholars and clinical psychology experts is crucial. This interdisciplinary approach can not only lead to more trustworthy and empirically valid results but also to the adoption of more sophisticated measures like the B- Scan 360. Furthermore, scholars should consider diverse factors like experience, socioeconomic backgrounds, industry dynamics variables - possibly simultaneously - when investigating unethical and illegal decisions. In fact, by integrating these perspectives, future studies can offer a comprehensive understanding of the complex drivers behind corporate misconduct, paving the way for effective preventive measures and adaptable legal frameworks within organizations.

6. Conclusion

This article presents a pioneering systematic literature review (SLR) on the influence of personality traits on top-level decision-makers' attitudes, subjective norms, and perceived behavioral control in the context of irresponsible management. It offers a twofold contribution: firstly, addressing the fragmented treatment of personality traits in management literature by advocating a holistic approach, and secondly, enhancing the understanding of irresponsible management beyond specific frameworks like the fraud triangle to encompass broader catalyst forces.

The research holds significant implications for scholars, practitioners, and policymakers. Organizations can utilize insights to screen and train leaders for ethical decision-making, while policymakers can enact preventive measures and legal frameworks to curb misconduct. Additionally, the study provides a timely and comprehensive SLR, filling a gap in the literature and setting a research agenda for future exploration.

Acknowledging limitations, such as potential errors in article selection or interpretation, the article encourages further inquiry into the generation of corporate misconduct. Overall, it serves as a foundational step for advancing understanding and addressing such occurrences effectively.

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Governing Micro-Municipalities: A Literature Review

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Abstract

The study explores the significance of Micro-Municipalities as prevalent forms of local governance globally, focusing on network relationships that shape community dynamics. Through a systematic literature review of 30 articles, it identifies four key nodes impacting municipal governance: society, stakeholders, residents and administrators. These nodes influence governance differently, depending on the resources exchanged in their relationships. The research proposes a network-based framework highlighting the need for multifaceted cooperation among these entities to enhance municipal governance. This framework offers insights for researchers, administrators and policymakers, addressing critical issues such as resource allocation, development initiatives, depopulation challenges, and sustainability. Overall, the study contributes to a deeper understanding of Micro-Municipalities and offers practical implications for improving their governance.

Key words: *Micro-Municipality; Governance; Network; Systematic literature review*

Framing of the research. *Micro-municipalities, a form of local government with a population of approximately 5000 inhabitants (Giacomini et al., 2018; United Nations, 2019), constitute the majority of local public entities in states around the world. In the U.S., about 76% of the approximately 19,500 municipalities have fewer than 5,000 residents; of those, almost 42% have fewer than 500 people (Statista, 2019). In Europe, 47% of micro-municipalities have less than 5,000 inhabitants (OECD, 2018, p. 6). Additionally, municipalities constitute an integral part of national and regional cultural heritage and play a pivotal role in current efforts toward sustainable revitalization (Baiocco et al., 2023) - a key driver for achieving the United Nations Sustainable Development Goals (UN Tourism, 2023). Due to their peculiar characteristics, municipalities require network support in managing urbanization, building/renovating infrastructures, and providing essential services, which has significant implications for their administrative structures (Atkinson, 2019).*

Previous scholarly investigations have produced various models concerning public governance, also considering a network perspective (Provan and Kenis, 2008; Klijn and Koppenjan, 2015; Koliba et al., 2017). Notably, Naveed and Azhar (2022) uncovered the significance of self-governance mechanisms within public networks, emphasizing the independent participation and interactions among various actors. This dynamic fosters the generation of collective solutions to shared problems. However, despite scholars investigating municipalities' governance facets (e.g., Kasymova and Schachter, 2014; Catlaw and Stout, 2016; Lara-Rubio et al., 2022), there is no systematization of results that would guide the reader to a deeper understanding of the various relationships that influence municipal governance. Failing to fill this void hinders our ability to comprehend the dynamics influencing micro-municipal governance, potentially leading to ineffective governance strategies, misallocating resources, and an inadequate response to the challenges posed by

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depopulation. The cost of not addressing this gap is a missed opportunity for informed governance, policymaking, and sustainable development tailored to the unique dynamics of municipal communities (Powe et al., 2022). Since they have a different role than towns and metropolises within their administrative dynamics, municipalities require a governance that resonates with their unique characteristics (Bel and Warner, 2015), challenging the notion of a one-size-fits-all approach.

Purpose of the paper. This study reviews the network relationships that influence municipalities' governance. Adopting a network perspective of public governance (Dimitrijevska-Markoski and Nukpezah, 2022; Naveed and Azhar, 2022), we first identified the four most significant network entities influencing micro-municipal governance: society, stakeholders, residents and administrators. For each, we identified the positive, neutral, or negative influences exerted on municipal governance and the resources exchanged within the relationship. In doing that, our work resonates with the call for further research on the relationship between network structure and mechanisms (Giacomini et al., 2018). Departing from the results, we propose a network-based framework depicting micro-municipal governance from a network perspective, prioritizing a multifaceted collaboration among the recognized entities. Furthermore, the framework highlights the relationships that need more attention in future studies that complement the research agenda for scholars we propose from the literature analysis - which includes the call for a nuanced definition of municipalities, in-depth analyses of identified relationships, and methodological pluralism.

Methodology. A systematic literature review (SLR) has been considered the most appropriate research design to consolidate and synthesize academic research regarding micro-municipal governance (as suggested by Edmondson and McManus, 2007). We followed an established process used in other SLRs (e.g., Cristofaro and Giannetti, 2021). In particular:

- 1) We used these databases to search for studies: Business Source Complete (EBSCO), Econlit, ISI Web of Science, Scopus, and ProQuest's ABI/Inform.
- 2) We limited our search to only peer-reviewed journal articles published in English. The research was not restricted to a given starting period (end period December 2023), and we did not apply any Journal exclusion criteria.
- 3) We selected articles if they include at least one of the following keywords: "municipal*"¹⁰ or "village*" or "town*" or "city" or "cities" or "suburb*" or "hamlet*" or "borough*" or "burg*" or "local*" or "urban" or "settlement*". We reached 68,563 hits.
- 4) We filtered for articles including at least one of the following keywords: "admin*" "manage*" or "govern*." We reached 6,567 hits.
- 5) We eliminated duplicates using reference-manager software. 4,290 hits remained.
- 6) From the 4,290 hits, we scanned articles by reading their titles and abstracts to ensure their substantive context was consistent with the aim of our review. This resulted in a sample of 598 articles.
- 7) The remaining articles were read in full to ensure their alignment with the research objective: contributing to the governance of municipalities. We specifically provided that the precise municipal dimension given by the practice (i.e., 5,000) could have been retrieved by reading the article; we discarded contributions that did not specifically identify the municipal dimension or give cues to it. This resulted in a sample of 27 articles. Cronbach's alpha regarding inter-rater reliability was 0.84.
- 8) We added three articles to the sample via the snowballing technique. The final sample is composed of 30 articles.

For steps 6) and 7), three authors individually read the articles and then compared their evaluation. If there was disagreement, the authors re-assessed their reports and decided whether to include the articles within the sample or otherwise. Chronbach's alpha regarding inter-rater reliability was 0.85.

For each article, we collected/coded publication i) year, ii) author(s), iii) Journal, iv) research question/goal/aim of the article, v) type of article, vi) adopted theory, vii) data collection, viii) study setting, ix) data analysis, x) dimension of the municipality, xi) node 1 and node 2, xii) the effect of node 1 on node 2 (positive, neutral, or negative), xiii) type of resource(s) exchanged, and xiv) public administration practice. Thanks to the identified nodes and relationships we built a framework for micro-municipal administration following a network perspective (Kim, 2006; Koliba et al., 2017).

Results. This section provides descriptive statistics of the investigated sample regarding the a) distribution of articles over time, b) the distribution of articles by journal, c) the adopted theoretical perspective, d) the adopted data collection and analysis methods, e) the public administration practices behind the exchange of resources, and f) the criteria considered for defining the micro-municipality.

Concerning the distribution of publications by year, between 2007 and 2017, articles were consistently produced at a low frequency. However, there was a notable improvement from 2018 to 2023 (from two to six articles). The frequency of publications suggests that the administration of micro-municipalities debates in the academic literature are a niche despite their relevance in public administration. Regarding the journal distribution, the most prolific outlet is *Cities* (4; 13%).

Regarding the adopted theoretical perspective, the most adopted perspectives were Good Governance (4; 13%) and Stakeholder Theory (3; 9%). The most common method for data collection is secondary data, accounting for 27% of total occurrences, followed by interviews (24%); accordingly, the descriptive approach was the most frequently used data analysis method (29%). Among the public administration practices behind the exchange of resources, the subject of inter-

¹⁰ The asterisk at the end of a search word allows for different suffixes.

administrational interactions is discussed in ten articles (33%), while participatory tools, transparency, public service commitment, and financial management are explored in four articles each (52% in total). Regarding the adopted criteria used for defining a micro-municipality, the number of inhabitants is the most adopted, and 25 articles (83%) identify this local entity as having no more than 5,000 inhabitants.

Finally, the research uncovers four nodes that affect micro-municipal administration:

- 1) *Society*: encompassing citizens, media, political parties, and universities, sets the broader context;
- 2) *Stakeholders*: this node includes various entities such as local self-administrations, entrepreneurs, investors, bureaucratic agencies, and informal community leaders;
- 3) *Residents*: citizens subject to the influence of the administration who can in turn actively influence the administration;
- 4) *Administrators*: this node centralizes the formal leadership and administrative structures.

These factors influence micro-municipalities' administration differently, according to the resources exchanged in these relationships. The analysis of exchanged resources among nodes shows that intellectual ones account for 26% (14) of the total.

Table 1. Summary of identified network influences on micro-municipality' governance

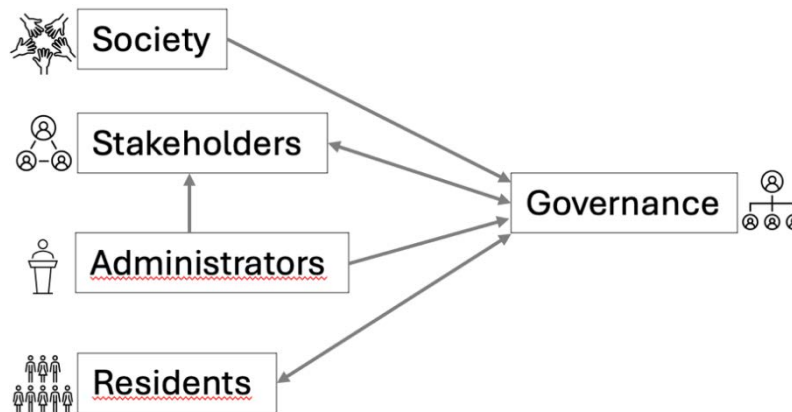
Node 1	Node 2	Relationship drivers	Authors	Direction	Public administration practice
Society	Micro-Municipality Administration	Unemployment Increased income per capita Reduced fiscal pressure	Lara-Rubio <i>et al.</i> (2022)	Positive	Financial management
		Higher population Lower unemployment Female municipal leadership Micro-Municipality public servant	Zagrapan and Spáč (2022)	Positive	Transparency
		Economic expansion Infrastructure investment Government intervention Targeted poverty alleviation Connection with towns	Tang <i>et al.</i> (2023)	Negative Negative Negative Positive Neutral	Inter administrative relationships
Stakeholders	Micro-Municipality Administration	Inter-local service agreements	Previtali, P. (2015)	Neutral	Inter administrative relationships
		Mandatory inter-municipal cooperation (IMC)	Giacomini <i>et al.</i> (2018)	Positive	Inter administrative relationships
		Tools for stakeholder participation in local development	Vitálišová <i>et al.</i> (2021)	Positive	Participatory tools
		Involvement of higher-level governments	Yi <i>et al.</i> (2018)	Positive	Inter administrative relationships
		Community leadership	Liu and Han (2023)	Positive	Inter administrative relationships
		Dissemination of methods of good governance	Sara and Saputra (2021)	Positive	Financial management
Micro-Municipality Administration	Residents	Efficient services and municipality Richest and most indebted municipality Right-wing or female mayors Lower voter turnout	Benito <i>et al.</i> (2021)	Positive	Transparency
		Proactive transparency	Sofyani <i>et al.</i> (2023)	Positive	Financial management
		Government-led redevelopment	Zhang <i>et al.</i> (2019)	Positive	Inter administrative relationships

		Top-down facilitation of public participation Politicization of public space Inadequate information disclosure	Hidayat <i>et al.</i> (2019)	Negative	Participatory tools
		Community report cards Budget discussion	Kasymova and Schachter (2014)	Positive	Participatory tools
		Accountability practices involving the community Micro-Municipality responsiveness Streamlined processes	Annahar <i>et al.</i> (2023)	Positive	Participatory tools
		Performance management systems	Beeri <i>et al.</i> (2019)	Positive	Performance management
Administrators	Micro-Municipality Administration	Familial and peer encouragement Social acceptance	Pamungkas <i>et al.</i> (2020)	Positive	Transparency
		Public service motivation and compassion	Liu <i>et al.</i> (2022)	Positive	Public service commitment
		Local leadership strategies for legitimation	Steenbergen (2016)	Positive	Urban regeneration
		Appointed volunteer boards provided with information and procedures and training	Dougherty and Easton (2011)	Positive	Public service commitment
Administration	Stakeholders	Good administration principles	Zaitul <i>et al.</i> (2023)	Positive	Inter administrative relationships
		Italian initiative "Houses at 1€"	Pera (2021)	Neutral	Urban regeneration
		Urban regeneration policies	Xiao <i>et al.</i> (2022)	Neutral	Urban regeneration
		Communication and coordination challenges	Fatimah <i>et al.</i> (2023)	Negative	Inter administrative relationships
Residents	Micro-Municipality Administration	Accountability and value for money attitude of residents	Jayawarsa <i>et al.</i> (2021)	Positive	Financial management
		Power distance Uncertainty avoidance Collectivism Femininity	Sonbay <i>et al.</i> (2022)	Negative Positive Positive Positive	Financial management
		Perception of micro-municipality elections	Tan and Qiushui (2007)	Positive	Public service commitment
		Collective self-governance	Zhang <i>et al.</i> (2022)	Positive	Inter administrative relationships
		Representative participation Project participation Problem-oriented self-organization	Kondratyev and Fadeeva (2021)	Negative Positive Positive	Public service commitment

Source: own elaboration

In Table 1, we present a comprehensive summary of network influences on micro-municipal administration, focusing on the relationships and effects (positive, negative or neutral) between the studied nodes (society, stakeholders, residents and administrators) and the micro-municipal governance. The table is organized based on the nodes from which the effect departs. This table serves as a foundational reference for the subsequent sections of this article, where influences will be examined and discussed. Figure 1 summarizes the relationships that emerged from the systematic review, the influences of which are observed below.

Figure 1. Relationships emerging from the SLR between the nodes of the network and the Micro-Municipal Governance



Source: own elaboration

Impact of Society on Micro-Municipal Governance

The studies conducted by Lara-Rubio et al. (2022), Zagravan and Spáč (2022), and Tang et al. (2023) examine the intricate relationship between society and municipal governance functioning. Lara-Rubio et al. (2022) focus on financial resources' role in society-municipality relations, identifying societal drivers such as unemployment, income per capita, and fiscal pressure influencing loan default risk in Spanish villages. They suggest tailored financial policies, including subsidizing loan interest rates, to address depopulation, promote youth employment, and reduce property tax burdens. Zagravan and Spáč (2022) investigate proactive transparency in Slovakian villages, finding associations between population size, unemployment rates, female leadership, and transparency levels, albeit challenged by personnel shortages and limited resources. Tang et al. (2023) analyze factors influencing built-up land development in Chinese villages, highlighting the complex interplay of scarcity, development intensity, economic expansion, infrastructure investment, and administration intervention. They recommend prioritizing urban development policies and integrated approaches for balanced village-town relationships, emphasizing the importance of physical, natural, and financial resources.

Impact of Stakeholders on Micro-Municipal Governance

This section synthesizes findings from six studies focusing on different aspects of village stakeholders' impact on micro-municipal governance. Previtali (2015) examines the effect of Italian administrative reform on inter-local service agreements, revealing a prevalent "collaborative inertia" among local governments. Giacomini et al. (2018) highlight the efficiency benefits of mandatory inter-municipal cooperation (IMC) in small Italian municipalities, particularly in reducing administrative costs and enhancing institutional legitimacy. Yi et al. (2018) explore interlocal collaboration in China, noting its focus on achieving sustainable economic growth and the formalizing role of national and provincial administrations. Vitálišová et al. (2021) investigate stakeholder participation tools in Slovakian villages, noting citizens' involvement in planning phases but decreased engagement in review and communication stages. Liu and Han (2023) observe that informal community leadership significantly enhances local governance through interactive feedback processes, stressing the importance of credibility and strategic organization to foster continuous participation and involvement in collective action.

Impact of Residents on Micro-Municipal Governance

This section explores studies highlighting how residents influence the practices of micro-municipal governance. In Bali, Jayawarsa et al. (2021) examined economic and financial management in traditional villages, emphasizing community commitment to empowerment and the need for value-based performance. Sonbay et al. (2022) explored how local culture affects financial system implementation in an Indonesian village, stressing the importance of cultural sensitivity. In China, Tan and Qiushui (2007) investigated village elections, revealing villagers' skepticism despite perceiving elections as fair, suggesting the importance of education and empowering elected committees. Kondratyev and Fadeeva (2021) and Zhang et al. (2022) focused on human and social resources' role. Zhang et al. (2022) discussed rural collaborative governance in Liushe Village, advocating for a combined top-down and bottom-up approach for sustainable rural development. Kondratyev and Fadeeva (2021) analyzed rural residents' self-organization in Russian villages, highlighting the need for nuanced governance strategies and inclusive practices.

Impact of Administrators on Micro-Municipal Governance and Stakeholders

This section examines studies elucidating the impact of micro-municipal administrators on local governance and stakeholders. Dougherty and Easton (2011) emphasize human resources' significance in U.S. local administrations, focusing on appointed volunteer boards' effectiveness in 274 villages. They find that management capacity significantly

influences board effectiveness, stressing the importance of a thoughtful selection process and training provided by local administrators. Pamungkas et al. (2020) investigate intellectual resources in an Indonesian village, analyzing fraud prevention models. They highlight the role of social support in officials' decisions to report fraud, emphasizing the importance of effective whistleblowing systems and culturally sensitive strategies. Liu et al. (2022) assess the public service motivation of village cadres in China, finding that it significantly influences effective garbage and sewage treatment. They advocate for strengthening cadres' motivation to protect public interests, emphasizing the crucial role of human resources in rural administration. Steenbergen's (2016) ethnographic research in Indonesia explores interactions between village administrators, local governance, and stakeholders. They highlight the mediating role of customary leaders in program success, underscoring the importance of inclusive governance and locally driven interventions for effective resource management, while recognizing the complexities within community leadership and administration.

Impact of Micro-Municipal Governance on Stakeholders

This section focuses on the relationship between micro-municipal governance and stakeholders. Zaitul et al. (2023) emphasize specific governance principles crucial for sustainable and inclusive practices, including fairness, inclusivity, legitimacy, participation, performance, transparency, and accountability. Numerous studies support the relevance of these principles in promoting inclusive and sustainable community development. The examination of the Italian initiative "Houses at 1€" by Pera (2021) provides insights into urban regeneration challenges and opportunities. The initiative aims to address depopulation and urban decay by selling abandoned properties for 1 euro, highlighting the need for tailored strategies considering local nuances. In China, improving the rural living environment is crucial. Xiao et al. (2022) evaluate local administration's role in enhancing the rural living environment, emphasizing fair policies, information transparency, and accountability. They stress the importance of considering regional differences in natural and financial endowments for effective policy design. In Indonesia, Fatimah et al. (2023) explore the regulation-making process in Rimba Sari village, highlighting communication and coordination challenges. They underscore the significance of intellectual resources and effective collaboration within village administration and consultative bodies, advocating for enhanced communication channels and coordination mechanisms for a more participatory approach to governance.

Impact of Micro-Municipal Governance on Residents

These studies collectively illuminate the relationship between micro-municipal governance and residents, uncovering various dimensions of administrative impact and identifying factors crucial for community well-being. Benito et al. (2021) and Sofyani et al. (2023) emphasize the importance of transparency in efficient governance, drawing insights from Spanish municipalities and post-reform Indonesian villages. They stress the role of transparency in building community trust and advocate for aligning transparency practices with communal norms. Zhang et al. (2019) highlight the significance of economic empowerment and formalization of informal economic activities in enhancing community resilience, based on the administration-led redevelopment of Tangjialing village. Hidayat et al. (2019) address challenges in negotiable administration in Bajo village, stressing the need for transformative changes to promote citizen engagement and overcome elitism, fostering democratic administration and citizen empowerment. Kasymova and Schachter (2014) and Annahar et al. (2023) explore inclusive administration in Kyrgyzstan and Indonesian villages, focusing on citizen involvement and participatory tools. They underscore the effectiveness of participatory tools in empowering citizens and advocate for merit-based recruitment practices and capacity building for village officials to ensure successful, inclusive governance. Beeri et al. (2019) analyze public performance management in Israeli local authorities, establishing links between performance management and citizens' perceptions of good governance, trust, and satisfaction with administration. They highlight the importance of performance management in enhancing citizen satisfaction and trust, recognizing it as a crucial tool for effective local governance.

Research limitations. As we advocate for a paradigm shift in micro-municipal administration, it is imperative to acknowledge the study's limitations. The selection criteria, though systematic, introduce subjectivity, and the interpretation of micro-municipalities may not capture the diverse nuances of local contexts. The limited number of articles, while a reflection of the current state of research, underscores the need for further interdisciplinary approaches and participatory research methods. Future research should bridge gaps by embracing cross-sectoral analyses, involving stakeholders, and addressing practical limitations. Prioritizing quantitative and qualitative approaches tailored for a network-oriented public administration will contribute to a more nuanced understanding of micro-municipal administration dynamics. This collaborative effort holds the promise of shaping more effective, responsive, and inclusive administrative structures for the evolving needs of our communities.

Managerial implications. Policy makers can enhance micro-municipal governance by implementing tailored financial policies to address issues like depopulation and unemployment. Supporting local enterprises and creating local supply chains can boost urban development. Sustainable practices should be embedded in policies, emphasizing fairness, inclusivity, and transparency, while fostering public service motivation among appointed volunteers. Facilitating resident participation in decision-making ensures effective engagement and inclusion. Aligning financial systems with local values empowers elected municipal committees, enhancing municipal autonomy. These measures collectively aid micro-municipalities in overcoming administrative challenges and promoting community well-being.

Public managers/administrators play a crucial role in efficiently managing municipal practices, particularly in urban development and collaborative initiatives. Leveraging resources strategically and formalizing collaborations with national and provincial governances is vital for sustainable economic growth. They should oversee education and training programs aimed at enhancing relationships within the network and engaging stakeholders effectively. Recognizing and involving informal community leaders strengthens local governance. Continuous improvement in transparency fosters openness and accountability, while inclusive governance practices ensure holistic information flow. Public administrators must maintain balanced and inclusive leadership, acknowledging diverse perspectives and fostering resilience. Embracing these recommendations can help cultivate a resilient, transparent, interconnected network, promoting effective governance and community well-being.

Originality of the paper. *Our framework emphasizes the needed multifaceted cooperation among identified entities influencing municipal governance. Being the first systematic literature review on this peculiar kind of governance, we provide researchers, administrators and policy makers with insights into critical issues in municipalities' governance and identify trajectories for future research.*

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Un modello di governance ESG integrato per una strategia aziendale sostenibile

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Abstract

Le nuove direttive Europee sulla sostenibilità, quali la Corporate Sustainability Reporting Directive (CSR-D) e la Corporate Sustainability Due Diligence Directive (CSDDD), richiedono alle imprese di promuovere comportamenti responsabili nei confronti dell'ambiente e dei diritti umani e di informare gli stakeholder riguardo ai risultati economici, sociali e ambientali generati nello svolgimento delle attività aziendali. Queste direttive hanno aperto nuove sfide di sostenibilità e le aziende si trovano, quindi, a dover gestire diverse tensioni riguardanti gli impatti economici, ambientali e sociali. Lo scopo di questa ricerca è quello di identificare un modello per l'analisi e l'integrazione della sostenibilità nella strategia aziendale che consenta una governance "integrata" in grado di gestire le diverse aspettative degli stakeholder. Il presente lavoro è condotto attraverso un approccio di ricerca-azione che coinvolge una grande azienda italiana operante nel settore alimentare. La ricerca ha adottato un modello che ha coinvolto, direttamente o indirettamente, i membri del CdA e l'alta dirigenza, i clienti industriali e commerciali ed i consumatori finali. Il disegno di una strategia di sostenibilità è emerso, quindi, come valido strumento per guidare il CdA nella gestione di tutte le pressioni ambientali, sociali ed economiche. L'originalità della ricerca risiede nella creazione della strategia di sostenibilità considerando l'influenza della governance e le richieste degli stakeholder strategici. Il contributo manageriale riguarda la realizzazione del modello in grado di integrare gli obiettivi di sostenibilità nella governance aziendale, in linea con le indicazioni del Forum Economico Mondiale (2020).

Key words: ESG, ricerca-azione, modello di governance integrato, strategia di sostenibilità

Inquadramento della ricerca. *La sostenibilità è un tema di crescente importanza all'interno dei dibattiti politici con effetti importanti sul quadro normativo. La recente normativa Europea sulla rendicontazione di sostenibilità, ovvero la Corporate Sustainability Reporting Directive (CSR-D), ha come obiettivo quello di informare gli stakeholder dei risultati economici, sociali e ambientali generati nello svolgimento delle attività aziendali, secondo quanto stabilito nel Libro Verde della Commissione (2001). La normativa amplia in modo significativo il numero di imprese tenute a notificare le informazioni sulla sostenibilità, introduce obblighi di rendicontazione più dettagliati e introduce l'obbligo di attestare la conformità della rendicontazione di sostenibilità da parte di un revisore terzo. Un'altra recente normativa è la Corporate Sustainability Due Diligence Directive (CSDDD) che impone alle imprese di gestire in modo responsabile gli impatti sociali ed ambientali lungo l'intera catena di approvvigionamento. Quindi, le recenti normative sulla rendicontazione e sulla pianificazione di politiche aziendali di sostenibilità (quali, la CSR-D e la CSDDD) stanno impattando su tutti gli aspetti della vita organizzativa e le aziende stanno valutando sempre più modi per trovare un equilibrio tra creazione di valore economico, ecologico, sociale e culturale nei loro modelli di business (Clarke, 2001). Gli stakeholder sono sempre più consapevoli dell'impatto che le imprese generano sull'ambiente e sulla società e sono sempre più interessati alle prestazioni delle aziende in termini di sostenibilità rispetto alle questioni ambientali, sociali e di governance (ESG) (Khan, 2019). Alla luce di ciò, è fondamentale che la ricerca si concentri sul ruolo della governance aziendale per guidare l'adozione e l'integrazione di pratiche sostenibili (Aguilera et al., 2021) atte a rispondere alle aspettative socioculturali. Queste richieste sono spesso incompatibili e le imprese devono gestirle simultaneamente. In questa prospettiva, la teoria del paradosso inquadra i conflitti tra obiettivi economici e socio ambientali come paradossi che vengono gestiti simultaneamente (Gao & Bansal, 2013; Hahn et al., 2015) e consente l'esplorazione di diverse soluzioni per affrontare insieme le tensioni e gli obiettivi divergenti legati alla sostenibilità (Carmine & De Marchi, 2022). Partendo dalla teoria del paradosso e considerando le diverse aspettative socioculturali*

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e commerciali legate alla sostenibilità creiamo un modello che possa supportare la corporate governance ad integrazione i principi ESG in una strategia di sostenibilità a lungo termine considerando gli aspetti ambientali, sociali ed economici.

In questo contesto, la corporate governance ha un ruolo centrale, perché descrive le strutture, i processi e le istituzioni all'interno e intorno alle organizzazioni che allocano il potere e il controllo delle risorse tra i partecipanti (Davis, 2005) e ha il potere di gestire in modo equilibrato le tensioni esistenti tra gli attori coinvolti, ovvero azionisti, management, Consiglio di amministrazione e dipendenti. L'integrazione dei criteri ESG e una buona governance aziendale contribuiscono alla creazione di valore a lungo termine (Kocmanová & Dočekalová, 2012), infatti, la corporate governance contribuisce non solo alla prosperità aziendale, ma anche alla responsabilità aziendale.

Con lo sviluppo dei mercati globali sono aumentate le aspettative e le pressioni degli investitori e di tutti gli stakeholder che richiedono standard più elevati di responsabilità, condotta e performance legate alla sostenibilità (Kocmanová & Dočekalová, 2012) che possono essere definiti dalla governance aziendale. La corporate governance ha un ruolo fondamentale perché è il sistema attraverso il quale le aziende vengono gestite e controllate (Kavaliř, 2005) e rispondono ai diritti e alle richieste degli stakeholder (Demb & Neubauer, 1992). La corporate governance, quindi, definisce obiettivi strategici di un'azienda, controlla la realizzazione degli obiettivi e informa gli azionisti sull'andamento delle attività (Cadbury, 1992) e per questo motivo ha un ruolo fondamentale nell'integrazione di obiettivi sociali, ambientali ed economici, spesso contrastanti tra loro, nella strategia aziendale di lungo periodo con l'obiettivo di creare valore economico e sostenibile (Kocmanová & Dočekalová, 2012). Tuttavia, data la varietà di interessi dei membri della governance aziendale, è possibile che la stessa società debba gestire anche i conflitti interni (Aguilera et al., 2021). In questo senso, è necessaria l'adozione di un "modello di governance integrato" (UNEP FI, 2014: 35) per gestire contemporaneamente le diverse questioni di sostenibilità che possono essere in conflitto tra loro.

Nonostante le recenti e fiorenti ricerche sulla teoria del paradosso, le sue applicazioni non hanno ancora pienamente incorporato una prospettiva strategica sistemica (Carmin & De Marchi, 2022) e ciò costituisce uno dei contributi alla letteratura di questo lavoro. La letteratura ha considerato principalmente la relazione tra governance aziendale e sostenibilità ambientale (Aguilera et al., 2021). Tuttavia, le applicazioni della teoria del paradosso non hanno ancora incluso pienamente una prospettiva sistemica strategica (Carmin & De Marchi, 2022), né la letteratura ha ancora sperimentato un "modello di governance integrato" alle questioni di sostenibilità (UNEP FI, 2014: 35). Lo studio presentato è stata, quindi, l'occasione per costruire un modello mirato a colmare queste lacune. Il modello sviluppato intende supportare la governance aziendale per integrare le questioni ESG, ed in questo senso fornisce una interpretazione operativa delle linee strategiche suggerite dal Forum Economico Mondiale (WEF) (2020).

Secondo il Forum Economico Mondiale (2020), una buona governance aziendale è in grado di sostenere la generazione di valore economico e il mantenimento della fiducia degli stakeholder e della società. In questa prospettiva, tale gestione dovrebbe integrare gli ESG nelle strategie a lungo termine attraverso sei aree di attenzione che sono:

1. Allineamento della strategia e dell'allocazione del capitale con i fattori di creazione di valore a lungo termine;
2. Internalizzazione dei fattori ESG materiali nella gestione del rischio d'impresa;
3. Rafforzamento della preparazione e la resilienza alle crisi e agli shock sistemici;
4. Collaborazione tra i CdA e il management per effettuare investimenti nella sostenibilità sociale e ambientale;
5. Preparazione del reporting tradizionale dell'azienda in modo integrato;
6. Adattamento dell'organizzazione, della composizione e dell'impegno del Consiglio a questi imperativi.

Le linee tracciate dal Forum Economico Mondiale devono essere considerate nel loro insieme al fine di garantire l'adozione di un modello di governo societario integrato che fornisca un sistema omogeneo in cui le priorità di sostenibilità siano pienamente considerate nel processo di creazione di valore e in cui i benefici per gli stakeholder siano assicurati in una prospettiva di lungo periodo (WEF, 2020; UNEP FI, 2014: 35).

Obiettivo del paper. Negli ultimi anni, accademici e professionisti hanno discusso dell'importanza della governance nella realizzazione di una strategia a lungo termine per garantire progressi verso un futuro inclusivo e sostenibile (Samans & Nelson, 2022) e creare valore coerente con le priorità ESG, al fine di rendere le organizzazioni più resilienti agli shock e alle crisi. Tuttavia, in letteratura mancano contributi operativi in cui il pensiero paradossale venga sfruttato come strategia per affrontare olisticamente l'integrazione della sostenibilità e per renderla parte della governance aziendale nel suo insieme (Carmin & De Marchi, 2022). La nostra domanda di ricerca riguarda cercare di capire se sia possibile creare una nuova strategia aziendale basata sui principi ESG attuati da una governance aziendale che orienti le scelte finanziarie e operative in maniera allineata alle aspettative e alle pressioni istituzionali (WEF, 2020) e degli stakeholder. Questa ricerca delinea un modello per l'integrazione della sostenibilità all'interno della strategia aziendale, volto a stimolare una governance in grado di gestire molteplici aspettative contrastanti (Carmin & De Marchi, 2022).

Metodologia. La ricerca si basa su un approccio di ricerca-azione adottato con una grande azienda italiana. La ricerca-azione (Cohen et al., 2017) comprende diverse caratteristiche, come il coinvolgimento con un'azienda, il suo processo interattivo, l'analisi dei cambiamenti nel tempo e la produzione di conoscenza scientifica. In questo processo il ricercatore entra in una situazione del mondo reale e mira sia a migliorarla che ad acquisire conoscenza (Checkland & Holwell, 2007) e ciò può contribuire alla pratica gestionale, così come al quadro teorico in cui si inquadra il problema osservato. In questo contesto, alcuni membri del Consiglio di amministrazione e top manager dell'azienda, in collaborazione con quattro ricercatori, hanno progettato la strategia basata sulla sostenibilità. I membri dell'organizzazione hanno contribuito attivamente all'analisi, lavorando con il gruppo di ricerca, in modo che i problemi potessero essere risolti e il sistema potesse essere migliorato. Da questo punto di vista, l'approccio adottato può essere profilato come un intervento in cui i ricercatori hanno raccolto le richieste, fornito risultati ed evidenze, e hanno

sviluppato il modello, mentre l'organizzazione ha fatto emergere i risultati e la strategia, dimostrando un certo approccio strategico nella governance aziendale. La ricerca-azione riguarda una impresa commerciale italiana operante nel settore alimentare. L'azienda è una società per azioni con un unico socio, fa parte di un grande gruppo europeo e in Italia dispone di due siti produttivi. L'azienda fattura circa 200 milioni di euro e conta circa 100 dipendenti. L'azienda ha ottenuto diverse certificazioni che provano l'alto livello di sensibilità verso le tematiche di sostenibilità, senza, tuttavia, aver adottato politiche, funzioni o specifici investimenti destinati. Subendo forti pressioni e richieste da parte dei propri stakeholder su tutte e tre le dimensioni della sostenibilità, l'impresa ha chiesto la collaborazione delle nostre istituzioni per iniziare il suo percorso verso l'integrazione della sostenibilità nelle sue strategie e pratiche quotidiane. In particolare, la competizione di mercato percepita ha rappresentato il primo tipo di pressione legata alla dimensione economica, le crescenti aspettative dei consumatori hanno delineato la pressione sociale, mentre la legislazione ha contribuito a stimolare l'organizzazione a definire un'integrazione olistica dei principi di sostenibilità, compresi gli aspetti ambientali.

Il disegno di ricerca prevedeva sette passaggi implementati in dieci mesi. La prima fase ha riguardato l'inquadramento del problema attraverso i dialoghi preparatori tra i ricercatori e i responsabili marketing e HSE, che sono stati responsabili del progetto, per comprendere lo scopo della collaborazione.

Nella seconda fase i ricercatori hanno implementato una revisione non sistematica della letteratura volta a identificare le tendenze del business riguardo all'integrazione delle questioni di sostenibilità a livello strategico e operativo. La revisione è stata condotta da due ricercatori e i risultati sono stati discussi con gli altri due ricercatori al fine di condividere dubbi, ridurre errori o ridondanze. Il risultato finale di questa fase è stata una lista composta da cento domande che valutavano il livello di maturità dell'azienda. La check list indaga dieci aree strategiche: innovazione sostenibile nel ciclo di vita del prodotto, sostenibilità degli imballaggi, etica e sostenibilità nella Supply Chain Management, politiche e pratiche di sostenibilità, etica nella gestione del personale e tutela dei diritti umani, gestione energetica e cambiamento climatico, gestione dei rifiuti, gestione delle risorse idriche, strategie di marketing e comunicazione, e infine, contributo alle comunità locali. La check list è stata, inoltre, discussa con i responsabili interni del progetto, per identificare eventuali integrazioni o per standardizzare le terminologie.

La terza fase ha riguardato la raccolta dei dati che è avvenuta grazie alle interviste che i ricercatori hanno condotto con dodici rappresentanti della Società. Quattro di loro erano membri del CdA (presidente, vicepresidente e due membri del CdA) e otto erano top manager (Amministratore delegato, Direttore generale, Manager delle risorse umane, Responsabile della catena di fornitura, Responsabile HSE, Responsabile del controllo qualità, Marketing Manager e Direttore delle vendite). Le interviste sono state effettuate sulla base di protocolli semi-strutturati finalizzati ad approfondire gli argomenti elencati nella check list e a identificare i rischi e le opportunità percepiti nell'implementazione di una strategia basata sulla sostenibilità. Ogni intervista è stata registrata e successivamente trascritta. Ciascuna trascrizione è stata, poi, validata dall'intervistato.

Nella quinta fase i ricercatori, i manager e i membri del CdA hanno lavorato insieme per identificare i clienti strategici. Analizzando tutti i canali di divulgazione disponibili (siti istituzionali, social network e, ove possibile, bilanci di sostenibilità), i ricercatori hanno individuato i temi prioritari per trenta clienti strategici dell'azienda che si occupano di sostenibilità. La selezione della clientela ha riguardato sia imprese industriali che commerciali, in particolare, diciotto imprese industriali e dodici commerciali. Il risultato finale di questa fase è stato un elenco di priorità dei clienti basate sulla sostenibilità.

Nella sesta fase sono stati coinvolti i consumatori finali, per raccogliere informazioni sulla loro percezione di sostenibilità e consumo responsabile. Questa ricerca è stata finalizzata ad analizzare le tendenze future rispetto ai temi legati alla sostenibilità. Ha coinvolto 1.005 consumatori. Il risultato è stato una descrizione della segmentazione della domanda, con un focus particolare sul ruolo dell'etica e della sostenibilità nelle preferenze di acquisto.

Questa analisi ha aiutato i ricercatori a identificare le potenziali aree di miglioramento mirate nella gestione delle pressioni complessive.

Infine, nell'ultima fase, i ricercatori, in stretta collaborazione con il direttore generale, il direttore marketing e il vicepresidente del CdA, hanno delineato una serie di obiettivi strategici volti a collegare tutti i risultati emersi dalle analisi sia interne che esterne. Tale proposta, denominata "strategia aziendale basata sulla sostenibilità" è stata elaborata secondo i pilastri ESG e la visione aziendale e, poi, presentata e condivisa nel CdA.

Risultati. Il metodo descritto ha portato alla progettazione di un modello per l'integrazione sistematica delle tensioni di sostenibilità che l'azienda deve affrontare nella sua gestione. La strategia è stata concepita come un insieme di iniziative a lungo termine. Nei prossimi anni l'impresa dovrebbe agire per l'adozione di queste iniziative considerando costantemente l'insieme dei suggerimenti emersi. Per quanto riguarda i contenuti complessivi della strategia, in sintesi, le principali iniziative rilevanti possono essere suddivise nelle tensioni legate alla sostenibilità sociale, ambientale ed economica che vengono spiegate di seguito, in dettaglio.

Le tensioni legate alla dimensione sociale sono state rilevate durante le interviste con i membri dell'impresa, nonché attraverso la consultazione dei consumatori. Come descritto, parte delle tensioni sociali erano legate alle aspettative dei consumatori riguardo al rispetto dei diritti sociali delle comunità locali e alle condizioni di lavoro dei dipendenti.

In particolare, il CdA si è concentrato principalmente sui dipendenti e sulle comunità locali. La valorizzazione delle potenzialità delle risorse umane è stata affrontata dalla strategia attraverso la definizione di specifiche linee dedicate all'apprendimento continuo dei dipendenti e l'adozione di sistemi di valutazione del personale, anche considerando l'impegno del lavoratore nell'acquisizione di nuove competenze o conoscenze.

Un'altra area di debolezza emersa dalle interviste era relativa ai rapporti con le comunità locali. Nella strategia sono emerse linee volte a promuovere una consultazione della comunità in cui l'impresa opera per rilevare aspettative e bisogni. In questa prospettiva è emersa come rilevante l'esigenza di un rapporto più stretto con le istituzioni locali, nonché di un più stretto collegamento con le associazioni dei cittadini. Azioni filantropiche e di collaborazione con le scuole locali per promuovere iniziative di formazione e tirocinio hanno rappresentato le proposte più rilevanti.

Le testimonianze dei clienti hanno sottolineato l'importanza di prestare attenzione al controllo etico delle catene di fornitura, con particolare attenzione alle condizioni di lavoro dei fornitori. In questa prospettiva la strategia fa riferimento all'adozione di una procedura di selezione dei fornitori basata su sistemi di controllo che includano criteri sociali e ambientali nell'ambito dei processi di accreditamento.

Per quanto riguarda le tensioni legate alla dimensione ambientale, esse si sono concentrate principalmente su questioni legate all'energia e alla catena di fornitura. Per quanto riguarda l'energia, è stato proposto un piano di ammodernamento degli edifici volto ad aumentare l'efficienza energetica.

Per quanto riguarda la gestione della catena di fornitura, ancora una volta, sia i clienti B2B che i consumatori, hanno sottolineato l'importanza dell'implementazione di sistemi di controllo della sostenibilità sui fornitori di beni (come audit di seconda parte), al fine di garantire la tracciabilità e il profilo verde dell'intera catena di fornitura.

Infine, sempre nell'ottica della logistica, la strategia si è concentrata sul miglioramento dell'efficienza del trasporto degli alimenti attraverso l'utilizzo dei treni come principale mezzo di trasporto.

Infine, le tensioni legate alla dimensione economica hanno riguardato soprattutto la competizione di mercato. Secondo la strategia proposta, la definizione di pratiche più sostenibili dovrebbe essere la base di un piano di comunicazione volto a costruire un branding di sostenibilità sociale e ambientale.

La strategia di comunicazione dovrebbe valorizzare, ad esempio, il raggiungimento delle Dichiarazioni Ambientali di Prodotto (EPD), sottolineando il rigore scientifico adottato nel calcolo degli impatti prodotti lungo l'intero ciclo di vita (prospettiva LCA). L'impegno complessivo verso una corretta comunicazione sulle strategie adottate dovrebbe rivolgersi a quell'89% dei consumatori che dichiarano di essere disposti a spendere di più per una confezione in materiale riciclato.

Limiti della ricerca. Sebbene la ricerca abbia un approccio strategico e fornisca un modello interessante, è ancora in una fase iniziale e necessita di ulteriori verifiche di efficacia, che dovranno essere valutate nel medio termine. In questa prospettiva, per mantenere un miglioramento continuo, sarebbe interessante verificare gli effetti di lungo termine dei piani delle aziende, per monitorare la crescita del loro contributo agli obiettivi di sostenibilità, misurando gli indicatori ESG nel tempo. Pertanto, si potrebbe condurre uno studio longitudinale. Gli effetti del modello implementato potrebbero, infine, essere testati osservando le dinamiche finanziarie o l'evoluzione dell'indice di fiducia dei consumatori avvenuta dopo l'integrazione del modello stesso.

Implicazioni manageriali. Il modello aziendale integrato proposto offre alle aziende un quadro per integrare una strategia sostenibile che soddisfi le richieste degli stakeholder e massimizzi il valore sociale. Incorporando i principi ESG, come quelli che emergono dal nostro modello, le aziende possono affrontare le molteplici sfide legate alla sostenibilità. In quest'ottica, la ricerca contribuisce alla comprensione della teoria del paradosso per esplorare come le organizzazioni possono sviluppare strategie per affrontare le diverse tensioni che sono legate alla sostenibilità aziendale simultaneamente (Carmine & De Marchi, 2022). Inoltre, il modello proposto consente di navigare nella complessità della sostenibilità e di promuovere un approccio olistico all'integrazione della sostenibilità nella governance aziendale, che manca in letteratura (Fineman, 1997; Friedman, 1992; Lee & Rhee, 2007; Rothenberg, 2007).

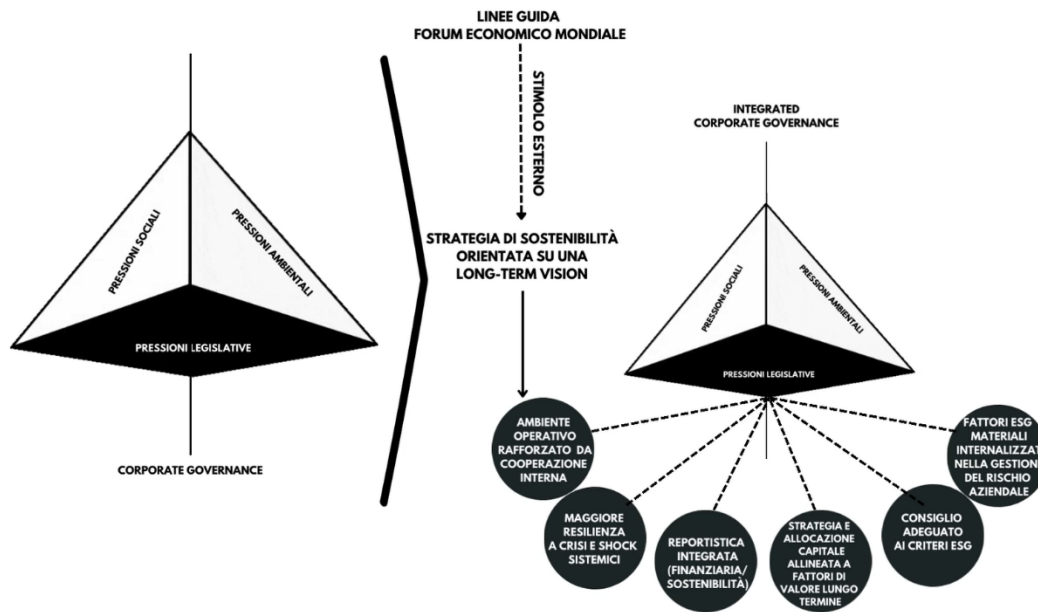
Da un punto di vista gestionale, il modello aiuta a valutare l'attuale livello di sostenibilità aziendale e a guidare lo sviluppo di strategie di sostenibilità a lungo termine basate sui principi ESG. Supporta, inoltre, la predisposizione dell'informativa societaria in linea con la nuova EU CSRD, combinando il reporting con le informazioni sui rischi e sulle opportunità ESG. Si tratta, inoltre, di un primo supporto nello sviluppo di approcci innovativi di governance finalizzati alla gestione etica della catena di fornitura, in conformità a quanto suggerito dal CSDDD. Il modello fornisce un quadro per le iniziative future e aiuta le organizzazioni ad allineare i propri obiettivi interni con gli obiettivi di sostenibilità.

Originalità del paper. La nostra ricerca si concentra sulla proposta di un modello di governance aziendale integrato che delinei una strategia d'azione per integrare e rafforzare il valore sostenibile a lungo termine per gli azionisti e gli stakeholder. Il modello sottolinea l'importanza di dare priorità ai principali stakeholder del mercato, come clienti e consumatori, e cerca di prevedere e bilanciare le tensioni legate alla sostenibilità.

Aderendo alla teoria del paradosso, è fondamentale riconoscere che i meccanismi di governance sono generalmente contraddittori, poiché sono alle prese con la sfida di conciliare gli elementi incentrati sugli azionisti e quelli incentrati sugli stakeholder. Poiché le pressioni descritte agiscono sulle aziende in relazione alla loro dimensione e non in relazione al loro settore, il modello presentato può essere applicato ad altre organizzazioni che si trovano ad affrontare gli stessi obblighi legislativi.

Il nostro approccio prevede, quindi, un modello di Corporate Governance Integrato che si può riassumere nella seguente figura.

Figura 1 - Modello di Governance ESG Integrato



Fonte: Elaborazione degli Autori.

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Does female corporate leadership improve environmental performance? A systematic literature review.

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Abstract.

A part of the management literature has paid attention to the effects of governance mechanisms on business performance. Among the governance aspects investigated, gender diversity can be mentioned. In addition to financial performance, the attention to sustainable performance – the ability of organizations to achieve their business and create value, considering long-term economic, environmental, and social responsibility – has gained even more importance in the business sector. However, a limited part of the literature explores the effects of female leadership on sustainable performance at a business level, specifically on the environmental dimension of performance. Understanding the effects that female corporate leadership may have on the environmental performance of organizations is pivotal, considering two aspects: i) the relevance of improving gender balance at the societal and business level and ii) the impact that environmental challenges will have on corporate strategies.

This paper presents ongoing research based on a systematic literature review. The aim is to elucidate the current research on corporate female leadership and the effects on environmental performance at a business level. The review also aims to identify existing literature gaps and offer opportunities for further research. The preliminary findings of our review, based on a sample of 128 articles, indicate an increasing recent interest in the research on these topics. Moreover, most studies show a positive relationship between corporate female leadership and environmental performance at a business level. The existing literature identified multiple reasons that explain why gender diversity in top management positively affects the environmental performance of organizations.

We aim to identify some opportunities for further research on this topic, such as exploring the relationship between corporate female leadership and environmental performance more qualitatively and measuring the effects on single components of environmental performance. Additionally, further examination of the role that a critical mass of women on the board has in the relationship is encouraged.

This review contributes to understanding the role that a higher level of gender balance in companies may have in improving environmental performance at a corporate level, providing valuable insights to inspire future studies and to inform managers and policymakers.

Keywords: *Female Corporate Leadership, Environmental Performance, Female on Board, Review.*

Framing of the research. *Sustainable performance has gained even more importance in business (Al-Abbadi and Abu Rumman, 2023). The literature highlights that corporate governance should be pivotal in achieving better performance, which is also confirmed for sustainability performance (Khan and Ghouri, 2022). There is an increasing research interest in topics such as the role of women at the corporate level (Terjesen and Singh, 2008; Baker et al.; 2020; Green and Homroy, 2018) and the effects that women in business may have on performance (Yang et al., 2019; Khatib et al., 2021; Arora, 2022). Moreover, the literature also pays even more attention to the role that females in business may have on corporate social responsibility performance (e.g., Hyun et al., 2022; Bose et al., 2022), “in line with the triple bottom line approach, based on economic, social, environmental aims.*

In this framework, the importance of the environmental dimensions of sustainability (and the related performance) at a business level is also particularly crucial. Environmental challenges related to climate change and the need for a net-zero transition, biodiversity preservation, or improving energy efficiency are only some sustainability challenges that require concrete actions and strategies from companies. At the same time, national, European, and international policymakers are increasing their attention to environmental issues and how companies must address them.

Purpose of the paper. *Recent research has highlighted the importance of exploring corporate governance mechanisms to understand their effects on sustainable performance at a business level (Chijoke-Mgbame et al., 2020; Harjoto and Jo, 2011; Shaukat et al., 2016). Management scholars are even more interested in understanding whether and how corporate female leadership influences sustainability performance at a company level, especially the*

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environmental performance dimension of businesses. At the same time, we do not find any systematic literature review (SLR) on the relationship between corporate female leadership and the environmental dimensions of sustainable performance.

The aim of the review is to understand the main existing findings in the academic debate on the relationship between corporate female leadership and the environmental performance at a business level. Moreover, we aim to shed light on what are the main gender diversity dimensions explored by the literature and the environmental performance aspects considered.

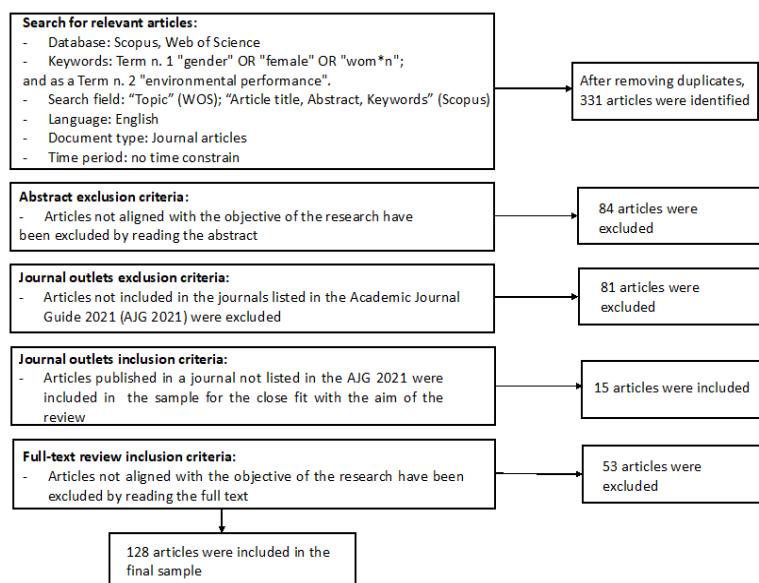
This review is based on a broad definition of environmental performance, including, for example, an ameliorate performance at a business level on waste management, on CO2 emissions, on environmental innovation, on environmental disclosure, or on the sustainability of supply chain, or on environmental-friendly products, processes or services, for example.

Methodology. We adopt a systematic literature review (SLR) methodology to review the existing literature on the relationship between female corporate leadership and environmental performance. SLR is considered a rigorous method, and it can produce reliable knowledge (Tranfield et al., 2003) and ensure a comprehensive account of the literature (Rosseau et al., 2008). It provides both the research design's replicability and the review process's transparency.

The SLR we adopted in this study has been based on two central databases, Scopus and Web of Science (WOS), "as they are considered complete databases (Linnenluecke et al., 2020) because they cover a high number of fields and ensure a wide range of articles. A set of keywords was used in the search title "Topic" for WOS and in "Article title, Abstract, Keywords" for Scopus to ensure all relevant articles were included in the research, including as term n. 1 "gender" OR "female" OR "wom*n"; AND as a term n. 2 "environmental performance". To do a comprehensive review, we decided not to limit the timeframe of the research. Therefore, the SLR is updated to the 26th of January 2024, when the data collection on the two databases has been completed. The research allowed us to select 331 (excluding duplicates extracted from the two databases). With the aim to reduce the risk of bias, all abstracts have been read by two researchers to see if the articles aligned with the review's scope. The research team has been trained for that specific task. To that purpose, 20 articles have been assessed by two researchers to test any alignment or misunderstanding on the review protocol and criteria. After that, the main findings were discussed in the research team to see any inconsistencies and define the correct process to follow before proceeding with the review of the other articles of the sample. That process allowed us to exclude 84 articles. Then, to ensure a high quality of business and management studies, we decided to focus our review on articles published in the Academic Journal Guide 2021 (AJG). The AJG's ratings are based upon peer review, editorial and expert judgements following the evaluation of hundreds of publications, and they are informed by statistical information relating to citations. The AJG is distinctive in that, unlike other journal ratings, it is not based purely on a weighted average of journal metrics. Instead, the AJG is informed by metrics. The ratings of journals reflect the outcomes of consultations carried out by the subject experts of the Scientific Committee with expert peers and scholarly associations as to the relative standing of journals in each subject area (Chartered Association of Business Schools, 2024).

Moreover, we decided to add articles published in the Sustainability journal as those studies aligned with the review's objective – even if that journal is not listed in AJG. Then, 181 full-text articles were read to examine their alignment with the objective of the review – that is, to explore the relationship between corporate female leadership and environmental performance at the business level. As a result of the full-text reading, 53 have been excluded. Therefore, the final sample of this SLR consisted of 128 papers. The steps of article selection are described in Figure n. 1.

Figure 1 Systematic literature review process.



Source: our elaboration

The research team used a shared spreadsheet to categorize the articles based on some information, such as year of publication, journal outlet, kind of research method used, gender leadership dimension considered, environmental performance dimensions considered, and the nature of the relationship between the corporate female leadership and the environmental performance. Other information will be categorized in the coming weeks as this project is ongoing.

Building upon this list, the research team conducted a qualitative analysis by coding the relevant information and data from the articles' text. The coding process has been discussed with the research team, and the coding has been reviewed and assessed more times to check for errors and inconsistencies.

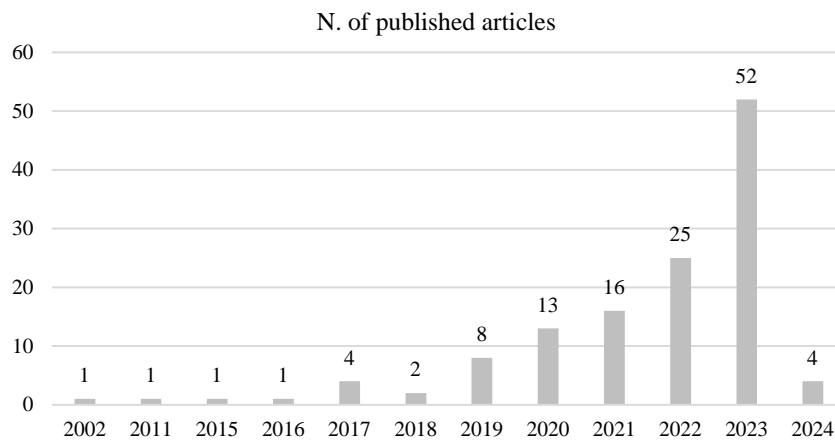
Results

Descriptive analysis.

Time frame, journals and research methods.

The research area on the effects of corporate female leadership on environmental performance at a business level has been receiving increasing attention among scholars in the last few years, as demonstrated by Figure 2. More than 40% of the sample papers have been published very recently, in 2023, and around 20% in the previous year, in 2022. We have to consider that in 2024, there are four papers in the sample that refer to the time of data collection (end of January 2024). It is also worth noting that until 2018, the topic was not explored extensively in the literature.

Figure 2. The timeframe of the sample articles



Source: our elaboration

The increasing scientific community's attention on the relationship between corporate female leadership and environmental performance at a business level is also shown by the wide range of journals interested in this kind of research. Indeed, the 128 papers of the sample have been published in 48 diverse journals (Table 1). The most relevant journals for the topic of this review are *Business Strategy & the Environment*, *Corporate Social Responsibility and Environmental Management*, and *Sustainability*.

Table 1. Academic journals.

Journal title	N. of papers
BUSINESS STRATEGY AND THE ENVIRONMENT	26
CORPORATE SOCIAL RESPONSIBILITY AND ENVIRONMENTAL MANAGEMENT	18
SUSTAINABILITY	12
JOURNAL OF CLEANER PRODUCTION	6
JOURNAL OF BUSINESS ETHICS	5
FINANCE RESEARCH LETTERS	4
TECHNOLOGICAL FORECASTING AND SOCIAL CHANGE	4
SOCIAL RESPONSIBILITY JOURNAL	3
JOURNAL OF MANAGEMENT & GOVERNANCE	3
ACCOUNTING AND FINANCE	3
JOURNAL OF MANAGEMENT & ORGANIZATION	2
CORPORATE GOVERNANCE-THE INTERNATIONAL JOURNAL OF BUSINESS IN SOCIETY	2
EUROMED JOURNAL OF BUSINESS	2
JOURNAL OF INTERNATIONAL FINANCIAL MARKETS INSTITUTIONS & MONEY	2
JOURNAL OF ACCOUNTING IN EMERGING ECONOMIES	2
BRITISH ACCOUNTING REVIEW	2
OTHERS (32 journals with one published paper each)	32

Source: our elaboration

Regarding the method adopted by the papers, most articles (around 91%) use a quantitative method to analyze the relationship between corporate females and environmental performance at a business level. Only 2% used a qualitative approach, while the remaining part (7%) adopted a mixed approach based on both qualitative and quantitative methods.

The corporate female leadership: what aspects have been considered?

We found in our sample that multiple dimensions of corporate female leadership have been explored, such as the presence of females on board, the female CEO, or the presence of females in other top management roles. Most analysed studies focused on the female board of directors' dimension (around 80% of the papers). Another part of the papers considers both females on board and females in top management aspects in the same study (10% of the sample's studies), "while a minor part of the sample investigated the female in the top management dimension (9%), "or the female on board and female advisors' dimensions together in the same study (one single paper).

The environmental performance: what aspects have been considered?

There are multiple variables that the 128 papers have been used to measure environmental performance.

We include a summary of environmental performance dimensions based on our elaboration and some examples in Table 2:

Table 2. The environmental performance dimensions

Environmental performance: dimensions	Examples
Indexes/ratings used as proxies of the environmental performance	<ul style="list-style-type: none"> - Indicators of the Global Reporting Initiative (GRI) - Indexes of the Refinitiv Eikon database - Carbon Disclosure Project (CDP) score - Thomson Reuters ESG score - Thomson Reuters ASSET4 environmental pillar - ENVIP, environmental disclosure index - Sustainalytics, environmental performance score - MSCI ESG STATS - VigeoEiris environmental score
Climate change	<ul style="list-style-type: none"> - Carbon emissions (CO2 or GHG emissions) - Disclosure on carbon aspects - Carbon performance
Resource use	<ul style="list-style-type: none"> - Water consumption - Energy consumption - Renewable energy use - Resource management - Waste management
Innovation	<ul style="list-style-type: none"> - Sustainable innovation - Eco-innovation - Green patents - Initiatives directed toward maintaining and protecting the environment - Environmental spending - Product innovation - Process innovation
Supply chain	<ul style="list-style-type: none"> - Sustainability of supply chains - Environmental supply chain initiatives
SDG	<ul style="list-style-type: none"> - Reference to Sustainable Development Goals linked to environmental aspects
Biodiversity	<ul style="list-style-type: none"> - Preservation of biodiversity - Mitigation impacts on biodiversity - Impacts on ecosystems
Certification	<ul style="list-style-type: none"> - Environmental Management Systems (ISO14001)
Disclosure	<ul style="list-style-type: none"> - Disclosure of non-financial information - Disclosure of climate change aspects
Other	<ul style="list-style-type: none"> - Greenwashing - Corporate environmental misconduct/damage - Environmental awareness - Revenues from green offering - Other environmental initiatives - Etc.
More environmental aspects	More environmental aspects among those indicated above are considered together

Source: our elaboration

To summarize, we found a broad representation of different variables and measures that have been analysed in the papers to represent environmental performance. Moreover, sometimes, we found that within a unique paper, multiple dimensions of environmental performance have been explored. In the case of indexes and ratings used as a proxy of

environmental performance, for example, the effect of corporate female leadership is examined with reference to multiple dimensions of the environment. The limit is that it is not possible to isolate that effect based on the single environmental measures and variables that compose the indexes.

Thematic analysis: the relationship between corporate female leadership and environmental performance.

The review shows that most of the analysed studies found a positive relationship between corporate female leadership and environmental performance at a business level. Specifically, 70% of studies argued that female leadership positively affects the environmental dimensions investigated. The investigated studies reported multiple reasons explaining the positive relationship between the two variables. For that reason, we categorized qualitatively the main motivations that the analysed papers included to explain the positive effects of corporate female leadership on environmental performance in some components: 1. High engagement of women in communication and disclosure (and/or in higher quality disclosure and reporting); 2. High sensitivity or commitment of women towards risks, environmental issues, ethical or social aspects, and more ethical behaviour; 3. The capacity of women to define relationships with the relevant community of stakeholders or to defend the interests of the relevant community and stakeholders, and other capacities of females in doing networks; 4. Women are more inclined towards environmental innovation; 5. Women can promote diverse perspectives or experiences and knowledge on board and have the capacity to take a leadership role in Corporate Social Responsibility (CSR) aspects; 6. Women have specific useful competencies, such as experience and, knowledge, and resources.

Some studies (16% of the sample) found a mixed relationship. Twelve percent of the analyzed papers do not find any effects of female leadership on environmental performance, while only a minor part of the sample (2% of the papers) found a negative relationship between women's leadership and environmental performance.

Expected results and suggestions for future research.

As the review is an ongoing process, we aim to analyse if investigated studies paid attention to the role that the presence of a critical mass of women leadership (e.g., the presence of a critical mass in the board) have in explaining the relationship between corporate female leadership and environmental performance. In any case, future research on this topic may explore more in-depth that aspect.

We will also explore if there are differences between females on board and another female leadership role (e.g., females in other top management roles) in the relationship with environmental performance.

As preliminary findings of our review highlighted, the sample of papers is mainly based on quantitative methods, future researchers may explore the investigated topic more extensively using qualitative approaches, such as case studies (Eisenhardt, 1989).

Research limitations. The review aims to study the relationship between corporate female leadership and a specific dimension of sustainable performance, the environmental one. This study does not deeply explore the other dimensions of sustainability, namely, the economic and social ones. Our main findings are thus only generalizable to some dimensions of sustainability performance. For those reasons, the replication of the review for social and economic dimensions of sustainability performance would be suggested.

Moreover, the review is based on a qualitative analysis of the sample of papers. A review of the effects of corporate female leadership on environmental performance based on different methods, i.e., on quantitative methodologies, can be carried out.

Managerial implications. The study has some important implications for companies and policymakers. Our review shed light on the effects of female corporate leadership on environmental performance. Most analysed papers highlighted that women in leadership roles positively impact companies' environmental performance. Understanding that a higher level of gender diversity representation in the top management has positive effects at the business level may encourage companies to promote gender diversity in their organizations. Managers should also focus more on specific governance strategies and mechanisms to address environmental issues. Moreover, our findings may interest legislators and regulators in considering setting quotas or incentivizing organizations to increase their gender diversity.

Originality of the paper. The review makes an original contribution to the literature on corporate governance and sustainability performance, as well as to the studies exploring female leadership's role in businesses. While extant similar reviews have mainly focused on the effects of female leadership on financial performance, to the best of our knowledge, no review exists on the impact of female corporate leadership on the specific environmental dimension of sustainable performance. Moreover, we offer a comprehensive review that analyses and synthesizes previous literature on the effects of female corporate leadership on environmental performance at a business level. Our review can stimulate novel research questions and aspects to be explored in that research area.

Our study also enables us to appreciate governance aspects and their effects at the intersection between the social dimensions (i.e., the gender aspects) and the environmental dimensions (i.e., environmental business performance) of sustainability.

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Websites

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The Geography of Innovation: The Phenomenon of Urban Clustering in the Fashion Industry

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Abstract

The geography of innovation underscores the importance of open innovation and spatial proximity in fostering collaboration. This paper explores the geography of innovation in the fashion industry through the analysis of a selection of papers focused on urban clustering in the fashion industry. A systematic search and thematic coding process using R software were employed. Findings reveal key insights into coordination, proximity, networks, entrepreneurship, and innovation dynamics in the fashion sector, highlighting the emergence of distinct clusters. Despite limitations like potential selection biases and language focus, the research offers valuable managerial implications. By leveraging geographic factors, firms can enhance competitiveness, while policymakers can support innovation and cluster growth. The paper's contribution lies in its comprehensive analysis of the fashion industry's innovation geography and its actionable insights for industry and policy. Through this research, a deeper understanding of the interplay between geography and innovation in the fashion industry is elucidated, providing a foundation for strategic decision-making and policy formulation in this dynamic sector.

Key words: *Geography of innovation; Urban clusters, Fashion industry; Spatial proximity; R, Content analysis.*

Framing of the research. *Much has already been written about the geography of innovation. One of the first scholars to study this topic was Marshall (1920), describing the way in which firms in Britain's industrial districts shared knowledge and know-how with each other in order to develop highly innovative products. In the following years, the topic experienced a new lease of life from the 1980s onwards thanks to the work of Piore and Sabel (1984), later to include many other concepts such as learning regions (Florida, 1995), clusters (Porter, 2003) and regional innovation systems (Cooke, Heidenreich & Braczyk, 2004). What links all these ideas is the notion that innovation depends on the activities of acquiring information and knowledge from external sources. These activities fall under the definition of "open innovation", defined as the umbrella that encompasses, connects, and integrates all information and knowledge acquisition activities (Chesborough, 2003). Economic geography today falls under this umbrella. More specifically, the multitude of concepts and ideas that associate innovation with local, or even extra-local, interaction have been brought together under the paradigm of "open innovation" (Shearmur, 2015).*

Thus, when we talk about the geography of innovation, we refer to the fact that firms innovate in an open context, within which proximity between the actors involved is crucial for successful collaboration (Boschma, 2005). Based on this definition, and by extension, the geography of innovation is often interpreted as the geography of proximities (Carrincazeaux, & Coris, 2011). These proximities can be social, organizational, or cultural (Cooke & Asheim, 2011) and can be of permanent or temporary duration (Torre & Rallet, 2005). Indeed, the geography of innovation has become the geography of the networks that support these proximities, and there is also a burgeoning field of research that focuses on the ways in which the advent of the Internet, the easier and faster means of transport, and the emergence of international inter-organisational networks contribute to the exchange of information and innovation even among actors who are not geographically close to each other (Moriset & Malecki, 2009; Bathelt, 2011; Glücker, 2011; Musso & Caraganciu, 2021).

In general, the most important conclusion of these research is that innovation takes place in clusters, much more often in urban areas, which are important transport and communication hubs able to foster not only the emergence of non-geographical proximities (Bathelt, Malmberg & Maskell, 2004) but also the internal dynamics of knowledge exchange, chance encounters, and specialized knowledge spillovers (Porter, 2003). More specifically, Glaeser (2011) theorizes that innovation occurs in "creative cities" embedded in larger metropolitan areas. Following this pattern, cultural industries tend to concentrate in cities while high-tech industries tend to cluster in the immediate vicinity. This seems to be further

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confirmed by the fact that, according to Acs et al. (2002), patents and new products are most likely to be conceived within large metropolitan areas.

However, this does not exclude the possibility that innovation may also take place outside of large metropolitan areas. Cook (2011) states that innovation can also occur in areas that are not particularly well connected, and the explanations for this phenomenon can be of various kinds: local knowledge, through which firms innovate, may be difficult to share; or innovation may be linked to specific natural resources that are exclusively present in a specific area. In any case, it is important to stress that in the current literature these examples continue to be the exception rather than the norm. Thus, the innovation landscape remains largely influenced by the processes that take place within the clusters represented by urban areas, which facilitate the exchange of information and know-how of enterprises.

Purpose of the paper. Given the above literature, an increasing number of researchers have attempted to study the geographical dimension of innovation and its implications for economic clustering. However, this literature seems to have focused excessively on clusters of small and medium-sized firms in high-tech industries, leaving aside other industries in which the geographical component plays an important role, such as the fashion industry.

This paper aims to address the gap in literature by investigating the factors shaping the geography of international production in the fashion industry. Specifically, it seeks to analyze a selection of studies focused on the dynamics of innovation and economic clustering within the fashion sector, with specific reference to urban clusters. By synthesizing existing research, the paper aims to provide insights into how geographic factors influence innovation processes in the fashion industry and explore future perspectives on this topic.

Methodology. The research methodology employed in this study involved a systematic approach to identify relevant literature and analyze its content. English-written publications only were included in the research, excluding *ad priori* papers written in other languages.

Firstly, a comprehensive search was conducted using Scopus database, employing three primary keywords: "geography," "innovation," and "urban cluster", independently from the year of publication. This initial phase resulted in ninety-eight publications.

In the subsequent phase, the papers were subjected to an initial screening process to ensure relevance to the research topic. This involved examining the titles and abstracts of the papers to identify those that potentially addressed the geography of innovation within the fashion domain. In particular, the ninety-eight publications underwent a detailed evaluation to determine their suitability for inclusion in the study. This involved a thorough examination of the full text of each paper to assess its alignment with the research objectives and the depth of its analysis on the geography of innovation in the fashion industry, removing all the papers that did not contain the following words in their title and/or text: "fashion", "apparel", "textile", and "garment". A final set of eight publications was identified as meeting the inclusion criteria. These papers were deemed to provide valuable insights into the geographic factors influencing innovation processes within the fashion industry and formed the basis for the subsequent analysis.

To analyze the content of the selected papers, thematic coding was performed using R software. This involved systematically categorizing the content of each paper into thematic areas related to the geography of innovation in the fashion industry. By dividing the content into thematic areas, this approach facilitated a structured and comprehensive analysis of the key findings and insights presented in the literature. Additionally, it allowed for the identification of common patterns, trends, and discrepancies across the selected papers, enhancing the validity and reliability of the research findings.

Overall, the methodology employed in this study aimed to ensure a rigorous and systematic approach to the identification and analysis of relevant literature on the geography of innovation in the fashion industry. Through a combination of comprehensive literature search, rigorous screening, and thematic coding, this approach facilitated the extraction of valuable insights and the generation of meaningful conclusions to contribute to the existing body of knowledge on this topic.

Results. The main findings, which are partly common to all papers, can be summarized in five main points: i) coordination, structure, and control; ii) proximity, location, and environment; iii) flow and connections; iv) enterprise and entrepreneurship; and v) innovation and knowledge.

The first point - i) coordination, structure, and control - refers to the challenges encountered by firms when operating in diverse geographical areas. Specifically, companies are confronted with the task of determining not only where to establish their operations but also the appropriate scale associated with them. Historically, these considerations were heavily influenced by the need to maintain control over production quality and efficiency, leading fashion firms to position their production facilities in close proximity to their headquarters. This approach was prevalent across all companies, whether haute couture or specializing in lower-quality garments. However, the landscape has shifted with the rise of fast fashion and the ubiquity of the Internet, facilitating greater control over production activities. On one hand, companies have streamlined their production processes to accommodate the demand for numerous collections each year. On the other hand, advancements in technology have diminished the significance of geographical constraints on production facilities, thanks to the simplicity and accessibility of new media platforms. For instance, the Inditex group, owner of the Zara brand, made strategic decisions to relocate some of its manufacturing plants from their traditional base in the Iberian Peninsula to countries like Morocco, Turkey, and Vietnam. This move capitalized on lower labor costs in these regions without compromising on quality or production speed (Tokatli, 2008).

The second point - ii) proximity, location, and environment - delves into the presence of other actors directly or indirectly associated with the company within its operational sphere. This encompasses not only competitors and consumers but also collaborators, suppliers, and various governmental or non-governmental bodies. These actors have

the potential to generate positive externalities for the company and foster the emergence of informal networks, both of which can spur innovation. This dynamic is exemplified in the world's renowned fashion hubs such as New York, Paris, and Milan (Power & Hauge, 2008), where the concentration of diverse stakeholders fuels creativity and growth. Similarly, cities like Istanbul (Olcay, 2013) and Auckland (Weller, 2014) demonstrate how the presence of major retailers (in the former) or a multitude of small and medium-sized textile firms (in the latter) contributes to the establishment of vibrant fashion clusters. These environments provide fertile ground for the inception and evolution of innovative ideas within the fashion industry.

The third point - iii) *flown and connections* - is intricately linked to the preceding discussion. These interconnected networks have the capacity to generate positive externalities, reverberating their effects across other geographical regions where the company operates. This presents the tangible prospect of fundamentally altering the production processes not only within the company itself but also within the broader network of associated enterprises within the same geographic vicinity. For instance, regions like Morocco and Turkey, notably Istanbul as mentioned earlier, exemplify this transformative phenomenon. Once simple industrial districts, they have evolved into veritable hubs of textile experimentation. Here, the expertise of the "parent" company is disseminated to, and reciprocally influenced by, its subsidiaries - a concept often termed as "reverse innovation." This paradigm shift, wherein the "bottom of the pyramid" emerges as a wellspring of innovation, is driven by organizational dynamics and the overarching corporate culture instilled in the region by major enterprises (Olcay, 2013; Tokatli, 2008)

The fourth point - iv) *enterprise and entrepreneurship* - addresses the pivotal role that small and medium-sized enterprises (SMEs) play in fostering the growth of a particular region. SMEs possess the capability to significantly influence regional development, yet they are also molded by the specific circumstances they encounter, particularly when a large enterprise chooses to establish a production center within their operational sphere. This scenario can give rise to two diametrically opposed conditions: a surge in entrepreneurial activity, as observed in instances such as Morocco and Turkey; or a decline in entrepreneurship. It is noteworthy that the latter scenario is more of an exception rather than a prevailing trend. In the majority of cases, the relocation of a major corporation to a particular area, especially if it is economically underdeveloped, results in a surge in entrepreneurial endeavors (Olcay, 2013; Tokatli, 2008).

The fifth and final point - v) *innovation and knowledge* - delineates the pivotal role played by specific urban areas, both in economically advanced and developing nations, in shaping innovation due to their inherent attributes. For instance, metropolises like New York, Los Angeles, and Montreal serve as epicenters where the rich amalgamation of art, culture, and social dynamics acts as a potent catalyst for innovation across the spectrum of the fashion industry, from designers to marketing agencies (Currid & Williams, 2010; Hauge & Hrac, 2010). Crucially, it's not merely the direct or tangential actors associated with the fashion industry - as elucidated in point ii) - but also the socio-cultural milieu within which these companies operate. In an industry profoundly invested in the pursuit of beauty and status symbols, environments such as Manhattan and Hollywood represent fertile grounds for growth and future development. These are locales steeped in accumulated knowledge, where experimentation flourishes, consequently fostering innovation (Rantisi, 2002; 2010). Conversely, in developing countries, the focus shifts from stylistic innovation to industrial innovation, emphasizing the quest for novel and more efficient production methodologies, as delineated in point iii).

The collective insights from the reviewed papers highlight several key factors crucial for understanding the dynamics of the fashion industry within various geographical contexts. Firstly, the paradigm of "coordination, structure, and control" elucidates the evolving strategies of firms in managing production operations across diverse locations, emphasizing the increasing flexibility afforded by technological advancements and global connectivity. Secondly, the significance of "proximity, location, and environment" underscores the role of vibrant fashion hubs in nurturing creativity and fostering collaboration among diverse stakeholders, thereby catalyzing innovation. Thirdly, the concept of "flown and connections" emphasizes the emergence of interconnected networks that facilitate knowledge exchange and innovation diffusion, particularly evident in regions undergoing rapid industrial transformation. Fourthly, the interaction between enterprise and entrepreneurship underscores the impact of major corporations on regional development, often stimulating entrepreneurial activity in economically underdeveloped areas. Lastly, the critical role of innovation and knowledge accentuates the influence of socio-cultural milieus on shaping innovative practices, both in established fashion capitals and emerging industrial centers.

These results show that two different types of economic clusters are being created in the fashion industry, each specializing in a different type of innovation, underscoring the complex interplay between geographical, economic, and socio-cultural factors. The "large western urban areas" clusters, whose peculiar characteristics allow continuous innovation in the style field, and the "developing countries" clusters, whose investments in the past years, by large players, have favored the birth and development of industrial agglomerations that are now able, after absorbing a high degree of knowledge and know-how, to become research and development centers in the industrial field. It is very likely that this trend, which has been going on for at least a decade now, with the improvement of means of communication and transport systems, will only strengthen, making the two-cluster model the norm in the fashion industry.

Research limitations. While this research offers valuable insights, it is essential to recognize its limitations to contextualize the findings effectively. Firstly, the selection process for papers may have introduced a degree of bias, as it relied on specific keywords and exclusion criteria. This approach might have overlooked relevant studies that did not align precisely with the search parameters. Additionally, the focus on English-language publications may have restricted the diversity of perspectives represented in the analysis, potentially excluding valuable insights from non-English sources.

Moreover, the scope of the selected papers may not fully capture the breadth of research on the geography of innovation in the fashion industry, leaving out potentially relevant studies or perspectives. In particular, the use of the Scopus database alone, may have hidden important work within the topic under analysis. Looking at future developments, it would be appropriate to include additional databases in the search spectrum - first and foremost Web of Science and Google Scholar, which were excluded in this preliminary investigation for two reasons respectively: the probable overlap of papers and the inclusion of non-scientific research in its archives. Therefore, it is crucial to interpret the findings within the context of these limitations and recognize the need for further exploration and validation through diverse sources.

Managerial implications. The implications of this research extend beyond academia to offer actionable insights for industry practitioners and policymakers. Understanding the geographic dynamics of innovation in the fashion industry can guide strategic decision-making for firms operating in this sector. By leveraging insights from the analysis, managers can make informed choices regarding production location, supply chain management, and market positioning to enhance competitiveness and innovation capabilities. Moreover, recognizing the significance of local networks and ecosystems can enable firms to tap into valuable resources and opportunities for collaboration, fostering a culture of innovation within the organization. Policymakers also have a role to play in creating an enabling environment for innovation clusters to thrive, through targeted interventions and support mechanisms that facilitate knowledge exchange, skill development, and entrepreneurship. By aligning policies with the findings of this research, stakeholders can collectively contribute to the sustainable growth and development of the fashion industry.

Originality of the paper. This paper represents a significant contribution to the literature on the geography of innovation, particularly within the context of the fashion industry. By synthesizing insights from multiple studies, it offers a comprehensive analysis of the geographic factors influencing innovation processes in this sector. The extension of this analysis to include diverse perspectives and methodologies enhances the robustness and reliability of the findings. Furthermore, by highlighting the importance of non-traditional industries like fashion in discussions of economic geography and innovation, this research broadens the scope of inquiry and opens new avenues for exploration. Overall, the originality of this paper lies in its ability to integrate disparate sources of information to provide a holistic understanding of the role of geography in shaping innovation within the fashion industry, thereby contributing to a more nuanced and comprehensive discourse on this topic.

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Strategic analysis of IRCCSs' sustainability management

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Abstract

Although Healthcare Organizations (HOs) are functional in improving and protecting health, they generate, a negative impact (mainly in terms of environmental pollution) on health itself, highlighting the need for the adoption of sustainability-oriented governance.

The paper analyzes the sustainable management modes of Scientific Research, Hospitalization and Healthcare Institutes (IRCCSs), whose businesses (care and research), include sustainability as an intrinsic dimension of their activities. The paper aims to study the sustainable strategic approach adopted by IRCCSs in the context of which it is relevant to explore also, but not exclusively, the role assumed by stakeholder management and sustainable investments.

The methodology used consists of a search for relevant documents and a joint analysis of secondary data conducted on the various strategic planning documents published by IRCCSs, and primary data from distributed questionnaires. Limitations mainly relate to statistical representativeness of the chosen sample, difficulty in accessing the documents and temporal mismatch in their publication.

The main result is the demonstration that IRCCSs, in addition to being promoters of innovation in the medical and managerial fields compared to other HOs, generate, through sustainability-based governance, positive impacts in economic, social, environmental, and ethical terms. To date, the priority areas in which IRCCSs' sustainability choices are manifested are: care services (e.g., waste management), supply chain management (e.g., supplier selection), digital innovation (e.g., telemedicine), and healthcare building (e.g., green hospitals).

The paper provides insights into the potential of adopting more sustainability-oriented governance in HOs, highlighting the crucial role of IRCCSs as promoters of sustainable strategic approaches.

Keywords: Healthcare Organizations, IRCCSs, strategic sustainability management, sustainable governance, strategic CSR

Framing of the research. The European healthcare sector, in 2021 (latest available data), led to an expenditure of 1,563 billion euros representing about 11% of GDP (Eurostat, 2024). The activities carried out by European Healthcare Organizations (HOs) result in such economic, social and environmental impacts that sustainability has become a critical issue. Health services are, in fact, intrinsically linked to social sustainability, since if the latter relates to the well-being of the community, healthcare is its driving sector. It is enough to consider that European HOs generate a significant climate impact: collectively they emit about 249 million MtCO₂ (Health Care without Harm, 2019; Karliner, 2019), equivalent to 10% of Europe's GDP (\$16.64 trillion in 2022), resulting in more than one million people dying each year due to environmental risk factors (WHO, 2023). The most recent political-institutional pressures, at the European (e.g., Next Generation EU, 2021-2027; 7th Ministerial Conference on Environment and Health, 2023; European Green Deal, 2019; Paris Agreement, 2015) and Italian (e.g., National Recovery and Resilience Plan, 2021-2027; Law decree 80/2021) levels, are also moving in this direction. The policy acts mentioned reflect a new logic regarding the roles and responsibilities of firms (Lee, 2008).

The analysis of IRCCSs' strategic sustainable management, subject of this paper, shows their value creation process. The dimensions of sustainability represent factors on which to act in managing the businesses (Engert, Rauter and Baumgartner, 2016) of IRCCSs to achieve competitive advantage.

IRCCSs (53) represent 3.5% of the total active HOs in the Italian NHS. Italy's National Health System (NHS) has a multilevel institutional set-up consisting of 21 Regional Health Systems (RHSs) in which a plurality of HOs operate (Ministry of Health, 2024).

IRCCSs were chosen for two reasons: they are knowledge-intensive firms and promoters of the evolution of the Italian NHS in the international context. In fact, by operating in the core business of healthcare R&D they have developed innovative clinical and managerial capabilities, configuring themselves also as pioneers at the regional, national and

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European levels in the field of sustainable management of their activities. Sustainability management in IRCCSs is placed in the broader framework of strategic Corporate Social Responsibility (CSR), in which innovation plays a vital role (Verdecho et al., 2021). Although there are many approaches in the literature to support firms in managing sustainability, the strategic CSR framework fosters a better understanding of the phenomenon under study in relation to the strategic specificities of IRCCSs.

CSR has been defined as the fulfillment of a firm's responsibility to the needs of current stakeholders without compromising its ability to meet the needs of future stakeholders (Dyllick and Hockerts, 2002; Smith, 2001). Having evolved since 2000 into strategic CSR, it is an opportunity for firms to reconfigure the competitive landscape and to develop distinctive and dynamic resources and capabilities (Husted and Allen, 2007). The concept of strategic CSR can be traced predominantly to the integration of social responsibility into corporate strategic plans (Lantos, 2001), ways of pursuing strategic goals (Van Marrewik, 2003) and achieving competitive advantage (Porter and Kramer, 2006). Attributing strategic relevance to CSR for firms means moving to corporate governance that: i) rethinks the concept of stakeholders (Freeman, 2023); ii) adopts differentiated stakeholder management strategies according to the degree of involvement in decision-making processes (Colvin, Witt and Lacey, 2020; Seman et al, 2018); iii) emphasize the role of collaborative strategies (Peloza and Falkenberg, 2009) based on the enhancement of interdependencies among actors/firms belonging to the public, private and social sectors (Trapp, 2012). It is worth noting that from the strategic point of view what is relevant is the ability of the firms to read the recalled aspects as interdependent (Carroll, 2015). Indeed, firms can compete by adopting a strategic approach that leads to the creation of shared value, in terms of benefits to society, while improving the firm's competitiveness (Porter and Kramer, 2018). CSR has become a strategic need for the enterprise in which the interdependencies between firm and society are maximized.

The integration of CSR is a challenging and progressive process over time, involving the incorporation of sustainability factors into the businesses in which one operates (Nguyen and Kanbach, 2024; Baumgartner, 2014). Sustainable strategic action by firms comes through the ability to reconceive services and redefine value chain activities. More recent studies highlight how strategic CSR today is geared toward the creation of sustainable shared value (Latapí Agudelo, Jóhannsdóttir and Davídsdóttir, 2019; Chandler, 2022). The management of relationships, exchanges, and interactions between the firm and stakeholders influence the scope of value creation in its various economic, social, environmental, and ethical forms (Evans et al., 2017). Sustainability has turned into one of the dimensions of corporate governance, meaning that it is a strategic choice of firms to elevate it as a driver of their decision-making processes.

This paper, as shown in the following section, explores the strategic actions of IRCCSs in terms of their ability to achieve competitive advantage by generating positive impacts in economic, social, environmental and ethical sustainability (through the integration of CSR into their corporate governance).

Purpose of the paper. The paper aims to highlight how IRCCSs, given their strategic nature, are promoters of governance based on sustainability. To this end, the research questions addressed by the present paper are:

RQ1: Do IRCCSs integrate their strategic objectives with those that are (economically, socially, environmentally and ethically) sustainable?

RQ2: Do IRCCSs pursue sustainability strategies?

RQ3: Among the possible sustainable strategies, which ones do IRCCSs adopt and to what extent do these strategies influence investments and external collaborations?

Based on the above questions, the paper presents the first results of an exploratory study to test the following hypotheses:

H1: There is a positive correlation between social, environmental and ethical sustainability in the studied IRCCSs.

Within firms operating in sectors other than Healthcare, this correlation has been confirmed in multiple studies, (Dolcini et al., 2023; Minoglou, Gerassimidou and Komilis, 2017) also if not to every extent (e.g., sometimes a medium level of social sustainability is correlated to a medium level of environmental one, while a high level in one doesn't imply a high level in the other one) (Sulewski, Kłoczek-Gajewska and Sroka, 2018).

H2: If the first two research questions have a positive answer the amount of sustainable investments is higher than in HOs that are not sustainability-driven.

As well somehow suggested also in previous studies (AlJaberi, Hussain, and Drake, 2017; Calabrese et al., 2023), the paper intends to show that if IRCCSs truly integrate sustainability goals into their strategies, they also have more investments on socially and environmentally sustainable actions (Stobierski, 2022).

H3: Sustainability-driven IRCCSs (regarding internal activities and operations) also integrate sustainability criteria when selecting external collaborations (with suppliers, other stakeholders, partners).

Research in other sectors show the correlation between internal sustainable choices and attention to sustainability in the adoption of collaboration and procurement strategies (MacDonald, Clarke, and Huang, 2022; Valbuena-Hernandez and Ortiz-de-Mandojana, 2022).

Methodology. The setting of the study is the totality of Italian IRCCSs (53), which seem more suitable than other types of HOs for several reasons:

- Compared to other HOs, IRCCSs are characterized by the presence of a greater number of strategic interdependencies between the corporate areas of research and clinical practice.
- IRCCSs play a key role in positioning the Italian NHS in the international scenario.
- IRCCSs foster a management approach based on the transfer of knowledge into daily medical activities.

- IRCCSs operate in cooperation and collaboration with other HOs and other firms to pursue their specific strategic goals.

All these aspects give to IRCCSs a specific strategic role in the evolution of the Italian NHS (Achard and Bellini, 2022) and in its direction toward governance based on sustainability (Maghsoudi, Cascon-Pereira and Beatriz Hernández Lara, 2020).

The study is qualitative-quantitative and integrates the desk research of corporate documents accessible through the IRCCSs' websites (secondary data), with primary data coming from the responses to a questionnaire administered to key strategic positions (e.g., medical director, administrative director, scientific director, members of the board of directors, divisional managers, heads of corporate functions such as purchasing, procurement, information systems) of the IRCCSs under analysis. The definite choice of questionnaire recipients is being determined through the strategic and organizational focus analysis of an IRCCS, taken as a sample reference, at a stage prior to the administration of the final questionnaire.

The documents considered in the desk research are: Strategic Plan, Mission statement, Sustainability Report, Social Report, Waste Plan, Performance Plan, Gender Equity Plan and Integrated Plan of Activities and Organization. The public availability of these documents has been detected according to the following search method: i) research on the "transparent administration" section of the corporate website; ii) If not found in the "transparent administration" section, research using the search bar of the website; iii) if not detected through the site's "search" function, they are considered as absent (which means they are not detectable, but does not mean they are absent in an absolute sense).

The questionnaire, calibrated following the response of the first IRCCS taken as the sample reference, should consist of 5 open-ended questions, which are essential to create a base of qualitative data useful for appreciating the level of attention to sustainability dynamics (including with respect to investments and collaborations), where these are not clear enough from publicly accessible strategic documents.

In addition, in order to collect quantitative data that can be used to create a correlation analysis between the factors analyzed, the questionnaire is supplemented with 10 multiple-choice questions, where multiple choice refers to two different typologies of items with respective two different types of variables:

- dichotomous variables, so items in which the possible answers are yes or no (e.g.: Has the IRCCS defined environmental sustainability criteria for the selection of its suppliers?).
- continuous variables, so items whose possible answers are ordered on a Likert scale from 1 to 5 or whose answer is a quantitatively appreciable data (e.g.: Compared to 5 years ago, how many more partners has the institution integrated into its sustainable strategy? In other words, how many collaborations have been formed with the goal of increasing social or environmental sustainability that were not in place 5 years ago)?

Some of the items are developed from the main criteria and attributes of social and environmental sustainability, to assign specific measures to both dimensions (Erjaee et al., 2022; Mehra and Sharma, 2021) and some others focus on the investigation of sustainable investments and collaborations, where not fully retrievable from published documents.

The first phase of questionnaire distribution will last for about one month; at the end of this phase, if the number of responses obtained turns out to be poorly representative, a second call for responses will be made targeting those IRCCSs that did not answer and that are of greater strategic interest to the study (because of the particular, or conversely poor, inclination to sustainability-oriented investments and collaborations). Next to this second phase, thus after about two months from the start of questionnaire distribution, we expect to have a sufficient sample to be able to test the hypotheses posed in a sufficiently representative manner. Therefore, from the joint analysis of the secondary data and those obtained from the questionnaire, it is verified whether the IRCCSs studied are sustainability-driven, whether there is a positive correlation between the three types of sustainability (H1), and whether the sustainable strategies are correlated with stakeholders and investments selection (H2 and H3). Regarding the amount of sustainable investments, the data will be analyzed in percentage value, as a ratio to IRCCSs' total investments, and will be normalized on the basis of the regional average investments' data (since some Italian Regions and, consequently, their respective RHSs have greater investment capacity than others).

Results. The integration between sustainable aims and corporate ones is greater in IRCCSs with sustainable drivers than in other types of HOs and this aspect is attributable to the distinctive competencies of IRCCSs, such as, for example, the ability to manage innovation and strategic collaborations (other than to legal requirements). Furthermore, it is expected that in the IRCCSs, the amount of investment in sustainable actions is greater than in non-sustainability-driven HOs, and that sustainability is interrelated with the selection of sustainable stakeholders and partners. Specifically, IRCCSs that establish criteria (with subsequent monitoring) for sustainability not only on service delivery processes, but also on collaboration and investment activities, are expected to have a greater outcome, in terms of sustainable strategic management. In addition, where an IRCCS is found to perform better in terms of economic, social, environmental, and ethical sustainability, it is also supposed to establish more formally defined criteria for its choice of stakeholders and investments.

Considering that the study is still in progress, it has been decided to present only the results of the desk research, which gives initial indications of IRCCSs to which the questionnaire (for the primary data collection) can be addressed. In other words, the presented data give more meaningful results in terms of usefulness, sustainability drivers and gaps on sustainability strategic documents.

Tab. 1 shows the IRCCSs, grouped by geographical areas, having strategic programming acts from which information on social, environmental and/or ethical strategies can be detected and indicates the quantitative values of the IRCCSs

that possess them (in absolute terms and as a percentage of both RHS and NHS). Year(s) of publication stands for the year in which the last available document among Sustainability Report, Social Plan and Mission Statement has been published by each IRCCS.

Tab. 1: Sustainable strategies in Italian IRCCSs, grouped by geographical areas

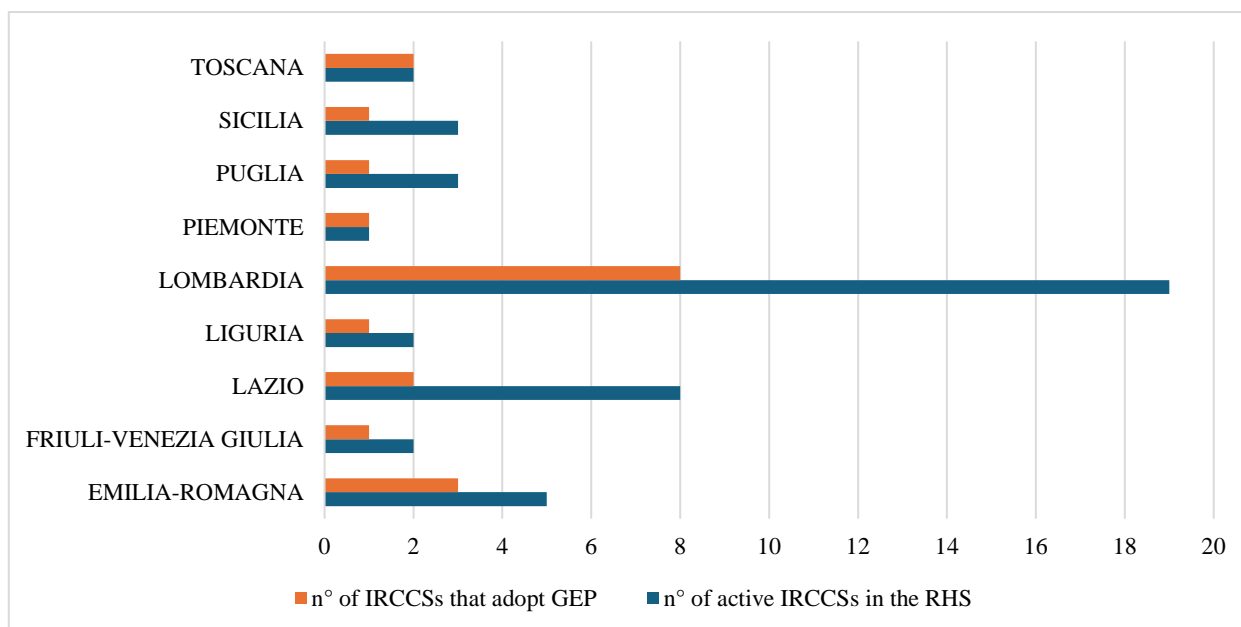
Geographic area (RHS)	n° of active IRCCSs in the RHS	n° of IRCCSs whose sustainable planning acts are accessible	% of IRCCSs with detectable sustainable strategies in the RHS	% of IRCCSs with detectable sustainable strategies in the NHS	Year(s) of publication
BASILICATA	1	1	100.0	1.9	2018
CAMPANIA	2	1	50.0	1.9	2012
EMILIA-ROMAGNA	5	2	40.0	3.8	2021
MARCHE	1	1	100.0	1.9	2016
LAZIO	8	3	33.3	5.7	2022; 2022; 2022
LIGURIA	2	1	50.0	1.9	2019
LOMBARDIA	19	4	22.2	7.5	2022; 2022; 2022; 2021
PIEMONTE	1	1	100.0	1.9	2022
SICILIA	3	1	33.3	1.9	2020
VENETO	3	2	66.7	3.8	2016; 2022
Total		17		32.1	

Source: authors' own elaboration

Fig. 1 shows the IRCCSs adopting the Gender Equity Plan (orange bars), comparing them with the total number of IRCCSs in their respective regional territories (blue bars).

Only RHSs with at least one IRCCS adopting one of the sustainable strategic documents among Mission Statement, Sustainability Report and Social Report (Tab. 1) or GEP (Fig. 1) were considered. The factors of economic sustainability, which acquire significant value for some specific IRCCSs, should not be overlooked, but in the case of the data presented, we mainly focus on sustainability in the social, environmental, and ethical spheres.

Fig. 1: GEP adoption in Italian IRCCSs, grouped by geographical areas (RHS)



Source: authors' own elaboration

As part of the desk research, strategic planning documents were collected, with a special focus on those that delve into the strategic orientation of IRCCSs with regard to social, ethical and environmental sustainability. Hence, what the documents analyzed deal with as a priority are the activities aimed at containing consumption, reducing pollution and eliminating inequalities with a view to occupational well-being.

It is essential to premise, moreover, that few of the IRCCSs analyzed make reference (in the documents reviewed) to the management methods, types and analysis of stakeholders, which, precisely because of this gap, will be explored in depth through the questionnaire that will be distributed.

Nevertheless, from the available documents, it's noticeable that the priority areas within which IRCCSs' environmental sustainable choices are manifested are the following ones:

- Nursing care services (e.g., reducing CO₂ emissions; managing medical waste; increasing appropriateness of services). For example, IRCCS Meyer has signed a sustainability protocol with Alia Multiutility Toscana to make differentiated waste management within the IRCCS more effective.
- Supply chain management (e.g., supplier relationships management). IRCCS Ospedale Pediatrico Bambino Gesù has promoted sustainable supply chain management by adopting procedures and policies for selecting suppliers, contractors and business partners that are fair and transparent and include the integration of ESG (Environmental, Social and Governance) criteria.
- Digital innovation of health services. IRCCS Fondazione Policlinico Agostino Gemelli started the KIT (Keep In Touch) 2.0 project for the care and monitoring of patients undergoing cancer treatment. The KIT mobile app allows the patients from to communicate from their home with the doctor and monitor their clinical situation also through smartwatches that allow for continuous information on different aspects of health.
- Healthcare building structures (e.g., green hospitals) (Prenestini, Ristuccia and Florianello, 2023). IRCCS Ospedale Galeazzi Sant'Ambrogio is among the most sustainable hospitals (at structural level) in Europe and is located in the Milan Innovation District. The IRCCS is designed to be fully developed in height and wherever flat roofs are not accessible they are resolved to intensive green roofs.

Moreover, the results of the desk research show that the strategic behaviors of IRCCSs in terms of their ability to create value and maintain competitive advantage go through strategies that are also effective in developing collective benefits. Conversely, it is also true that strategies aimed at social sustainability, as already specified, are inherent in IRCCSs' activities and, therefore, necessarily contribute to creating value and competitive advantage in the Healthcare system.

Finally, there are secondary factors that can be highlighted by a reading of Tab. 1 and Fig. 1, which could complement the discussion with expanded reference to the RHSs under consideration, although the specific focus of the current study remains at firms (and therefore IRCCSs) level.

For instance, among the RHSs there is one in which more than 1/3 of the total Italian IRCCSs are concentrated, Lombardia, which, however, when considering the percentage of IRCCSs that adopt sustainability strategy documents, ranks last among all RHSs (22.2%). This is not to say, however, that IRCCSs in Lombardia do not follow any sustainable principles or adopt strategies that are not sustainability-oriented. In fact, as has been said, it is not possible for HOs in general to achieve strategic goals without implicitly considering sustainability factors. The point that is most useful to capture, perhaps, is the paucity of transparency regarding how these goals are achieved from a sustainable perspective. Related to this, one could understand the reported data from a different perspective: rather than seeing it as a prospectus on IRCCSs sustainability, it can be seen as a point in the issue of transparency on data considered crucial for corporate sustainability analysis. This opens a further consideration: while it is true that IRCCSs that do not publish data (or whose strategic documents were not found to be accessible) are not necessarily disregarding sustainability in their strategic choices, value must be placed on the absence or inaccessibility of such documents. Transparent reporting in the healthcare system has value in monitoring HOs and improving public opinion regarding the quality of the healthcare system (Hafner et al., 2011) and, therefore, is always of great importance to be encouraged even at the central level of Health Policy (Akmal, Gauld and Penno, 2022). It is emphasized, however, that the topic of sustainability has been introduced, formally and legally, in the healthcare system recently, so moving ahead of the advancement and absorption of this topic in strategic management, even of advanced HOs such as IRCCSs, is certainly a factor to consider when noting the absence of adopted strategic documents. IRCCSs, dealing with healthcare R&D, also compete and collaborate with European firms in the project and investment domains, this implies that the adoption of sustainable practices is implicitly necessary since, often, it is one of the necessary requirements. It follows from what has just been recalled that it is normal for IRCCSs to be more sustainable than other firms that only operate within the Italian NHS, as is expected to be confirmed by the full results of the study.

Research limitations. In the healthcare system, the issue of sustainability is widely spread (Gubelli et al., 2020), but not yet implemented in the strategies of most firms, so it is difficult to have a clear picture of what they do and how they operate from a sustainable perspective. Apart from some documents (e.g., the PIAO, the integrated plan of activities and organization), within which environmental sustainability part has been integrated, there are no real minimum standards to which IRCCSs must adhere in developing their strategies of sustainable nature. In addition to non-standardization limitations (just mentioned), another issue, methodological in nature, is the lack of external validity, due to two factors:

- Limit of statistical representativeness. The study will not be numerically representative because exhaustive information or people willing to fill out the questionnaire cannot be found in all IRCCSs, so the sample identified will still be limited to a minimal part of the totality.
- There is a time mismatch in the publication of the documents analyzed because of the temporal differences in the election of the regional representatives.
- The possibility of access to documents in digital format is attributable, in part, to the degree of digitization of the enterprise.

Managerial implications. The paper provides an incentive for HOs managers to consider potential uptake of projects, activation of corporate functions and creation of task forces dedicated to social, environmental and ethical sustainability. The organizational structure that serves as a vector for sustainable practices can also be supported through the

development of an internal communication system. Evidence, moreover, contributes to the stimulation of corporate potential, as the analysis of the most advanced and pioneering healthcare firms can incentivize others by generating a benchmark effect. Thus, the concept of sustainability understood as a need for regulatory legitimacy and institutional isomorphism on the part of HOs could be overcome, aiding in the development of internal management modalities that favor the dissemination of good (sustainable) practices adopted by the most cutting-edge firms of the Italian NHS. Moreover, the paper may help decision makers to prioritize sustainability practices with the goal of helping to recognize the most significant strategies for pursuing sustainable goals. Waste reduction and management, energy choices, healthcare facility upgrades, use of technology, and investment in staff training can guide managers in building competencies for sustainable governance.

Originality of the paper. The present paper contributes to define the current scenario in the adoption of sustainable strategies by IRCCSs and to expand knowledge in the area of sustainable strategic management within HOs, including by understanding the interconnections between corporate governance, sustainable investments, and external collaborations. HOs are widely studied firms, including regarding the impacts that sustainability has at a corporate level both in Italian and European contexts. Despite this, it is difficult to find a state-of-the-art on the topic that explores strategic actions of very representative firms from a management perspective. Instead IRCCSs, benefiting from highly correlated business diversification and differentiation strategies, and competing, as already mentioned, also at the European level, could be considered highly representative. Finally, the paper does not rely on the punctual analysis of instruments, but researches and proposes a broader overview that completes the picture of strategic CSR within HOs.

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The role of HR analytics to enable Strategic HR management in SMEs

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Abstract

Despite human resource (HR) management activities are increasingly recognized as crucial also for small and medium enterprises (SMEs), in the last decade the academic literature has mostly overlooked the difficulties experienced by these companies when dealing with the matter. Consequently, the objective of this study is to explore these difficulties and to understand how a data-driven approach enabled by HR analytics can help in overcoming them and establish a strategic approach to HR management in SMEs. In order to do so, a qualitative, multiple case study methodology will be applied. This approach will allow us to revitalize the academic discourse by incorporating the contemporary challenges and complexities encountered by SMEs when dealing with HR management, filling the void left by the stagnation of literature in the past decade. Furthermore, we will expand the HR analytics related literature by exploring its role also in SMEs.

Key words: HR management; HR analytics; HR management activities; small companies; medium companies; SMEs, qualitative approach, multiple case study

Framing of the research. Italy is home to a substantial number of small and medium enterprises (SMEs) that form the backbone of its economy (Istituto Nazionale di Statistica 2023). These enterprises, often family-owned or characterized by close-knit communities (Matarazzo et al. 2021), typically exhibit peculiarities that distinguish them from their larger counterparts, such as limited resources, a familial organizational culture, and a close interdependence between business and personal relationships (Nigri and Di Stefano 2021)

The profound shocks experienced globally in the past few years, including economic downturns and public health crises, have been even more pronounced in SMEs, amplifying the challenges faced by these enterprises (Miklian and Hoelscher 2022), due to the intricacies of their operations coupled with a higher degree of interdependence between business and personal relationships (Rubio-Andrés et al. 2022). This heightened turbulence has accentuated the critical role of human resource (HR) management in SMEs. With the increasing complexities and uncertainties in the business landscape, SMEs have been compelled to reassess their HR management strategies to effectively navigate through these challenges (Ottolenghi 2023). As a result, there has been a notable escalation in the emphasis placed on HR management practices within SMEs, highlighting the imperative for robust HR management frameworks tailored to the unique needs and constraints of these enterprises. Unlike larger organizations with dedicated HR departments, SMEs often grapple with limited HR expertise and financial constraints (Psychogios et al. 2016). Furthermore, these enterprises are notably lagging in the digitalization of HR management processes compared to their larger counterparts (Verma et al. 2021; Nicolás-Agustín et al. 2024). In SMEs, the responsibilities of HR management frequently fall on the shoulders of the owner / manager, a role that demands multifaceted competencies ranging from strategic HR planning to daily operational tasks. This dual role places a strain on the managerial capacity, potentially hindering the development of effective HR management strategies (Atkinson et al. 2022).

To address this issue, there is a growing recognition that HR analytics, defined as «a proactive and systematic process for ethically gathering, analyzing, communicating and using evidence-based HR research and analytical insights to help organizations achieve their strategic objectives» (Falletta and Combs, 2021, p. 54), can serve as a valuable tool for SMEs, providing insights and data-driven decision-making support in the absence of a dedicated (and strategic) HR function (Biea et al. 2023). Indeed, although until a few years ago, this tool was the prerogative of only a few companies - particularly, multinational corporations in the technology or financial sectors (Andersen 2017) - in recent years, its diffusion has significantly increased even in smaller-sized enterprises. This has been made possible by the evolution of technology, which, on one hand, has allowed for the automation of a considerable part of the process, making analytics more accessible even to individuals with limited expertise in data analysis (Arora et al. 2021). On the other hand, technology advancement has substantially reduced the costs associated with these solutions, a crucial aspect for SMEs often operating with limited resources. Providers of HR analytics technologies have also played their part by designing

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tailored solutions specifically addressing the needs of SMEs (e.g. Keka and People Matters 2023). The utilization of HR analytics in SMEs is particularly pertinent, given the limited expertise and time constraints typically faced by owners / managers (Atkinson et al. 2022). This tool can offer crucial advantages in enhancing decision-making processes related to HR management, compensating for the absence of specialized HR professionals.

Despite the burgeoning body of research in HR management, there exists a significant gap when it comes to investigating the intricacies of HR management within the context of SMEs. The current literature, though expanding, remains fragmented and variable, marked by a diversity of definitions, explanations, and methodological approaches (Harney and Alkhalaf 2021). This gap is further exacerbated when considering the myriad challenges and difficulties that SMEs encounter in the realm of HR management. While scholarly attention towards HR management in SMEs was relatively extensive during the 1990s and the initial years of the 21st century (e.g. Tocher and Rutherford 2009), there is a conspicuous absence of more recent studies that reflect the substantial changes these businesses have undergone in the last decade. The evolving landscape, characterized by global shocks and technological advancements, necessitates a contemporary understanding of HR management in SMEs. Adding to this lacuna, existing research on the topic has predominantly adopted the perspective of the owner/manager, overlooking the invaluable viewpoint of employees (Harney and Alkhalaf 2021). This is a noteworthy concern, especially given the assertion that employees in SMEs have been observed to be more 'discriminating' and 'diagnostic' compared to the owner / manager (Verreynne et al. 2013). Focusing solely on the owner / manager perspective limits the comprehensiveness of our understanding, potentially overlooking crucial nuances in the HR management dynamics within SMEs. Furthermore, despite these companies are increasingly relying on HR analytics to deal with their HR management practices, previous studies on the topic typically focused on large companies, as these typically present the most advanced HR analytics tools (Cayrat and Boxall 2022; Thakur et al. 2024).

Purpose of the paper. *In light of the research gaps that have been identified, the main objective of this paper is to provide a more comprehensive understanding of the multifaceted challenges and difficulties faced by SMEs when dealing with HR management. This will be done by adopting a holistic approach that considers a dual perspective, the first from the owner / manager and the second from the employees. Furthermore, our research endeavors to assess the role of HR analytics in assisting SMEs in navigating these challenges. Our study will thus try to answer the following research questions:*

RQ1: What are the main challenges and difficulties experienced by small and medium enterprises when dealing with human resource management?

RQ2: How can a data driven approach fostered by HR analytics help in overcoming these issues and foster a strategic approach to human resource management in small and medium enterprises?

Methodology. *To address the research questions formulated in this study, we will employ a qualitative method, adopting an exploratory multiple case study approach (Yin 2014; Sardi et al. 2020). Respondents will be selected through purposeful sampling in order to assure that they possess specific criteria relevant to the purpose of our study. To facilitate the recruitment process, we will collaborate with one of the largest Italian HR analytics technology providers, leveraging their network and resources to reach potential participants efficiently. Specifically, we will select small and medium Italian enterprises which have been implementing HR analytics in the last three years. In addition to respect the conditions to be defined as a small or medium enterprise (Loecher 2000), selected companies should be privately owned (thus excluding, for example, spin off companies from larger organizations, even if they should respect the abovementioned conditions). Companies will be included from a variety of sectors, growth stages (startups, established businesses, companies scaling up, etc.) and HR management maturity level (from a totally informal to more advanced infrastructures) to ensure that participants will provide diverse and relevant perspectives. Ideally, to assure a representative sample of participants, we would like to include at least 20 companies.*

Semi-structured interviews will be conducted with key organizational stakeholders, encompassing both the owners / managers and the employees. The Gioia method (Gioia et al. 2013) will guide the analysis of these interviews. To facilitate a comprehensive coding approach, all interviews will be transcribed in their entirety (Miles et al. 2014). The analytical process will involve a multi-step iterative approach, incorporating critical verification techniques such as cross-checking by different coders to enhance validity (Morse et al. 2002).

Results. *As the study is currently ongoing, the following discussion outlines the possible results that may be obtained by reflecting on those of previous research. Previous studies, such as Tocher and Rutherford (2009), have highlighted that SMEs commonly encounter challenges in attracting, developing, and retaining high-quality employees. This aligns with a broader understanding that SMEs face distinctive hurdles in their HR management practices.*

Typically, SMEs grapple with a range of difficulties in HR management, including resource constraints, limited expertise, and the inherent complexity of managing both business and personal relationships within the organization (Nigri and Di Stefano 2021). These challenges often manifest in the struggle to establish effective recruitment and retention strategies, provide comprehensive employee training and development, and implement robust performance management systems (Mendy 2021; Jones et al. 2024).

While these issues have been extensively examined in the existing literature, recent years may have witnessed the emergence of new challenges. Although scholarly attention towards HR management challenges and difficulties in SMEs appears to have slowed down, contemporary developments such as the emphasis on diversity and inclusion (Ravazzani et al. 2021), the growing importance of employee wellbeing (Pagán-Castaño et al. 2020), and the integration of innovative technologies like artificial intelligence could introduce novel complexities (Biea et al. 2023). The dynamic nature of the

business landscape suggests that these trends may significantly impact HR management practices in SMEs, necessitating a reevaluation of traditional challenges and the exploration of contemporary issues.

Against the backdrop of these challenges, the strategic adoption of HR analytics emerges as a potential catalyst for overcoming these hurdles. HR analytics offers a data-driven approach that can empower organizations to make informed decisions, optimize processes, and address longstanding challenges in a more efficient manner (Falletta and Combs 2021). Regarding talent acquisition and retention, HR analytics can provide valuable insights into recruitment trends, employee preferences, and turnover patterns (Di Prima et al. 2023). By leveraging predictive analytics, organizations can identify potential recruitment challenges, understand factors contributing to employee attrition, and tailor strategies to attract and retain the right talent (Yahia et al. 2021). HR analytics can also optimize training and development initiatives by identifying skill gaps, assessing the effectiveness of training programs, and providing real-time feedback. This data-driven approach allows organizations to prioritize training investments and ensure they align with business objectives (Di Prima and Ferraris 2023). For what concerns performance management, HR analytics may enable a more objective evaluation of employee performance, facilitating fair assessments and data-driven feedback (McCartney and Fu 2022). This can contribute to the development of personalized development plans and, ultimately, enhance overall organizational performance (Di Prima and Ferraris 2022). Finally, in the face of emerging challenges such as diversity and inclusion, employee wellbeing, and technological innovations, HR analytics can help organizations adopting a proactive approach. By analyzing data related to workforce diversity, employee satisfaction, and the impact of technological advancements, SMEs can tailor their HR strategies to meet evolving needs. For instance, predictive analytics can help forecast potential wellbeing issues, allowing organizations to implement proactive measures to support their employees (Gurusinghe et al. 2021).

Research limitations. *Despite its important contribution, this study is not exempt from limitations. First, as data will be exclusively collected in Italy, the findings may have limited generalizability to different cultural, economic, or institutional contexts. SMEs in other regions or countries may exhibit distinct characteristics that influence HR management practices and outcomes differently. Second, despite all necessary precautions will be taken, the accuracy and reliability of the data hinge on participants' willingness to provide honest and comprehensive responses. Response bias, where participants may provide socially desirable responses or withhold certain information, could impact the validity of the results. Third, qualitative analysis, such as the interpretation of semi-structured interviews, introduces an inherent subjectivity. The researcher's interpretation and coding process may influence the outcomes, potentially leading to biased conclusions.*

Managerial implications. *This study bears significant practical implications for practitioners and SMEs owners aspiring to refine their HR management practices. Initially, the meticulous identification and exploration of the primary challenges and difficulties confronting SMEs furnish practitioners with actionable insights. A comprehensive understanding of these challenges empowers practitioners to formulate targeted strategies, effectively surmounting obstacles and fostering a more efficient organizational environment. Secondly, the explication of HR analytics' role may serve as a catalyst for increasing the adoption of this sophisticated tool within SMEs. In fact, its usage may improve decision-making processes and organizational outcomes, with a positive impact for both the enterprise and the overall society, since SMEs constitutes the backbone of Italian economy.*

Originality of the paper. *This study will contribute significantly to the existing literature by shedding light on the role of HR management within the distinctive context of SMEs. First, by delving into the main difficulties faced by these enterprises, the study will reopen a crucial debate that witnessed its peak in the 90s and the first decade of the 21st century, yet experienced a notable decline in scholarly attention thereafter. The research will not only clarify the contemporary challenges but also introduces new findings, considering the emergence of novel complexities such as technological advancements, diversity and inclusion imperatives, and other evolving trends. Second, unlike a predominant focus on the viewpoint of owner / managers in most previous studies, this research takes a novel approach by incorporating the perspectives of employees. Recognizing the significance of both organizational leaders and staff in shaping HR management outcomes, this inclusive approach provides a more comprehensive understanding of the dynamics at play within SMEs. Third, this study stands out in the realm of HR analytics literature by shifting the focus from large enterprises to SMEs. While much of the existing research concentrates on the adoption and impact of HR analytics in larger organizations, this paper addresses a critical gap by exploring the utilization of HR analytics technology in the context of SMEs. By doing so, it offers unique insights into how these businesses leverage technology to enhance their HR management practices, bridging a significant knowledge void in the current academic landscape, ultimately expanding and enriching the existing literature on the topic.*

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Trick or Treat: Firm's strategic response to temporary shock in the real estate business

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Abstract

The sector crisis, exacerbated by the arrival of the pandemic and the need to guide the real estate sector, among the most energy intensive, towards ecological transition, has prompted the Italian government to promote initiatives aimed at stimulating the economy and driving the process of urban redevelopment. Therefore, in 2020, the government promoted an incentive scheme aimed at supporting investments in energy and seismic issues through the involvement of several private actors. On the wave of the shock generated by the policy, real estate building companies had to decide whether to innovate in order to address the new type of demand supported by the rules introduced by the Government. However, managerial skills, time constraints and the relative competitive position of firms have provided different opportunities. The paper investigates the idiosyncratic traits of the real estate building companies that have led to these differences in the exploitation of the resources made available by the Government. In addition, we introduce a risk indicator associated to the negative effect produced by the policy. Results show that while some geographical similarities are present, managerial skills may have contributed to find the right balance between opportunity exploitation and risk management.

Key words: Managerial skills; Dynamic Capabilities; Energy transition; Policy; Real-Estate;

Framing of the research. *Climate change mitigation policies are increasingly under the scrutiny of all governments in the world. While providing an opportunity for countries to take advantage of the potential effect at the macro-level, those policies more often generate alteration to the internal market in which they are implemented. For this reason, Governments seek to maximize the sustainability effect of the policy by not limiting the effects to environmental aspects but also trying to promote the social and economic sustainability of the country.*

The need for firms to respond to the introduction of innovations and the evolving consumption habits of consumers that generates supply and demand shocks in the industry has been largely debated in the Economic and Managerial literature (Wang et al., 2014). In such a context, the managerial impact on strategic change and firm performance has been largely emphasized (Helfat et al., 2015). From a Dynamic Capabilities perspective, formulating a strategy to gain a competitive advantage starts with the adoption of suitable business models and technologies. This adoption facilitates the seamless combination and orchestration of assets that are inherently challenging to replicate (Teece, 2007). A stream of literature has emphasized how firm's diversity in a competitive environment may lead to the adoption of different strategies due to comparative adjustments costs (Argyres et al., 2015). Indeed, firms must consider the costs and time needed to shift from their existing position to any of the potential competitive positions that may arise as a result of the innovation shock; hence, they must decide whether, where, and how to adjust to a particular competitive position opened by the shock (Argyres et al., 2018).

The real estate sector is responsible for 43% of the whole energy consumption, with residential properties contributing to two thirds of consumption at the European level (Enerdata, 2021). The European Union, as part of the European Green Deal, has introduced the Energy Efficiency of Buildings Directive, aiming to establish minimum standards that countries must adhere to within specified timelines.

In response to these directives and to contribute to the economic recovery, in 2020, the Italian government has introduced a new incentive mechanism to support the environmental transition of the Real Estate sector. This program, called "Superbonus", has offered tax incentives for all costs spent by citizens on the requalification of their homes (mainly seismic and energy improvements). The incentive consists of a tax deduction of 110% of the expenditure. This, while providing an opportunity for citizen, has contributed to the surge in demand for services in several sectors. Among the most activated industries by the policy are, obviously, the Real Estate (with all the entire supply chain connected to the provision of the services) and the banking sector.

However, some aspects related to the policy have led companies to modify their business strategies in order to respond to new market needs. This has led companies to add innovations to their business models and the ability to manage such innovations has been the key to the success of the companies in the last 3 years; indeed, in order to guarantee the social sustainability of the policy and a fair access to opportunities, the government has introduced 2 credit management mechanisms. The first consists in the possibility of the citizens to monetize the incentive by selling the credit generated

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through the restructuring. The second involves a discount on the invoice by the construction company in exchange for the transfer of the credit from the citizen to the company which, in turn, will be able to decide whether to use the tax credit or sell it to third parties. Such mechanisms should have prevented the inability of citizens to exploit the benefits due to low fiscal capacity or liquidity constraints (indeed, the discount on the invoice was usually equal to the total amount since the company was able to obtain a credit equal to 110% of the invoice).

Due to this, banks had the opportunity to create a market for credits since financial institutions were the only actors authorized to buy and re-sell this new type of credit (while the others only had the possibility to buy and use the fiscal credits for their needs).

On the other hand, building companies were asked from the market to offer the invoice discount as an alternative payment method. In order to satisfy the new rising demand, firms were asked to create a new system of credit management that involved financial, fiscal and managerial capabilities. Indeed, while fiscal and financial abilities should be used to determine the appropriate volume of work to manage while satisfying the financial obligations, managerial skills were crucial to manage the supply chain requirements needed to respond to the increased demand for work.

These prerequisites turned out to be even more necessary in the moment of explosion of demand given that the market offer was not able to absorb all the requests generated by the incentive.

In such a context, managerial skills have been crucial in defining objectives in line with company capabilities. Although, in the short term, the wickedness of some companies has produced unfair competition on the market, as soon as the issues related with this new type of business began to emerge, most of these companies found it difficult to continue their activities, creating discontent among the clients who had hoped to carry out the works at zero cost.

Purpose of the paper. Drawing on the literature on innovation capabilities and the conceptualization of comparative adjustment costs, the work aims to provide an overview of the relationship between firms' competences and structure, innovation strategies, and their impact on performance. The study is applied within a specific framework that, as previously mentioned, has temporarily positively shocked the market demand due to the introduction of a policy that has generated a new market segment (i.e. the completion of the renovation works with a discount on the invoice and, therefore, no financial outlay for the client). While creating new demand for building companies, the policy has shifted part of the original demand towards this new market segment.

This paper attempts to contribute to this literature by providing new empirical evidence on the impact of firm's competencies on the ability to respond to market changes. Differing from most previous contributions, this work delves into a sector with low managerial involvement. Furthermore, the peculiarity of the case under study arises from the temporary nature of the shock, which introduces an additional parameter for firms to consider in their strategic choices. From a policy perspective, the paper explores how uncontrolled resource distribution can accentuate disparities among companies, thereby amplifying the competitive gap dictated by original capabilities.

Methodology. The empirical goal of the paper is to assess the strategic actions and performance across the heterogeneity in competence and structure that characterizes the industry in response to the introduction of the Superbonus. The analysis is conducted on a database of real estate building companies that are monitored from year 2018 to 2022.

The two main research questions we aim to investigate in the paper concern the firm's characteristics that may have contributed to increase the likelihood to enter this new market, generated by the policy, and whether there exist some aspects that have facilitated the management of this transition.

In order to answer the first question, we will measure the willingness to innovate the original business by implementing the invoice discount and, as a consequence, we will look at the rate of variation in the fiscal credits between the period before the introduction of the policy (2018) and the last available year (2022). Furtherly, we will see whether some firm's characteristics have also contributed to the increase in the volume of production, measured as the rate of variation in turnover over the same period.

In the second part of the analysis, we will measure the ability of firms to navigate the policy by developing a risk metric that relates to a significant issue faced by companies due to the policy, specifically concerning the trading of fiscal credits. This challenge was evident in both the invoice discount scenario, where the responsibility of selling the credits rested with the company, and in the credit transfer situation, where the buyer paid the company and monetized the incentive through credit sales. The conversion system faced a substantial setback primarily due to a lack of buyers. Consequently, companies found themselves accumulating fiscal credits without the ability to convert them into liquidity. Simultaneously, clients struggled to meet their financial obligations because of the difficulty in promptly converting credits at various project stages.

Hence, the risk measure used in the analysis is constructed as:

$$\frac{\text{Fiscal credits}}{\text{Turnover}}$$

The firms' characteristics that we aim to investigate are their overall competence, the organizational structure and the managerial capabilities. Given the availability of information in the data, the three measures have been proxied as the "Average employee salary" for firm's overall competence (Diaz-Fernandez et al., 2009), Return on Assets for the

managerial² aspects and the “number of employees in relation to the turnover volume” for the organizational structure.

For the first part of the exercise, given that the goal is to understand the strategic decisions made on the base of the ex-ante structure of the firms, we will regress lagged companies' structures on the final variable of interest³.

In order to estimate the effect that organizational structure and competence have played in this period (i.e. The ability to navigate the policy), we have used the difference-in-difference with continuous variable treatment (Callaway et al., 2024) regression to exploit the introduction of the exogenous shock as a trigger point, while taking into account the different organizational, managerial and competence levels. Since the introduction of the measure was in mid-2020 and works took a while to start due to the lack of available materials, the effects on the balance sheets are likely to be present from year 2021; hence, the arrival time (trigger effect) was postponed by one year and constructed as (0.5 for 2021 and 1 for 2022). Finally, regional fixed effects were used to account for the territorial differences that have emerged in the implementation of this policy, both on the supply and demand side. The second year of the Superbonus in the trigger variable is greater than the first because our variable of interest are likely to sum up to the previous year; hence, a standard dummy variable would be likely to bias our estimates.

Data and Statistics. The companies analysed cover the whole Italian territory. The dataset is limited to firms that had an available balance sheet and a turnover constantly above one million euros for the entire period under analysis, in order to ensure adequate reliability of the financial statements.

The overall dataset is made of 11.059 real estate building companies which were selected according to their NACE code. The period of analysis cover 5 years-time (from year 2018 to 2022 (last available)). Since our only source of information is the AIDA database, we exploit the information obtainable from the balance sheet in order to deepen our research interests.

Table 1: Average value by year. *(value in thousands of euros)

Firms Overview	2018	2019	2020	2021	2022
Turnover*	5188	5498	5280	6726	8260
NOI*	123	162	159	108	415
Fiscal Credits*	206	210	218	450	672
Credits to Client*	2119	2154	2152	2455	2824
Employees	23	24	25	27	27

Table 1 shows how the policy has pushed firms' turnover, while simultaneously increasing the relative weight of credits in relation to firms' size and turnover.

Indeed, by looking at the yearly variation in different measure of riskiness that we considered [i.e. $\frac{\text{Fiscal Credits}}{\text{NOI}}$], it is clear how the overall riskiness related to this concept has changed with the arrival of the Superbonus; moreover, despite the fiscal credits compared to the net operating income have decreased in 2022, it is crucial to consider that while the fiscal credits will remain in companies balance sheet for the next five years, if they won't be able to find a buyer, the end of the Superbonus will probably be reflected in a huge drop in firms' turnover and income from year 2023.

The need to find potential buyer for the credits deriving from the Superbonus (included those related to clients since they were likely intended to sell them to third parties⁴) for such a large amount of credits is, nowadays, resulting in very large discount rate which will be reflected as income loss for firms and citizens.

If we look at the geographical effects of the policy, we can see that while the variation in fiscal credit was larger in the northern area, with the exception of some Sicilian provinces (Figure 1), the variation in financial turnover was much more relevant in the southern regions.

² Given that all the companies are in the same business, we assume that ROA can be a proxy of the managerial capacity of the company in generating profit.

³ The need to investigate the strategy rather than investigating the evolution has led to the exploitation of the dataset in longitudinal terms but without utilizing its panel structure.

⁴ Indeed, many citizens have been forced to anticipate the cost of refurbishment due to the difficulties in finding building firms that were able to offer the invoice discount after the initial period of euphoria. This was mainly done through private liquidity or bank mortgages; however, given the high cost required to satisfy the energy improvement minimum standards, the ability to monetize fiscal credits through tax deduction is only possible for a relatively large share of households. Moreover, no further impediments have been caused by the Superbonus, in terms of availability of liquidity to pay for renovations for owners who have no intention of selling tax credits, such as to justify such a significant increase in the ratio between customer receivables and turnover.

Figure 1: Variation in Fiscal Credit (2019 to 2022)

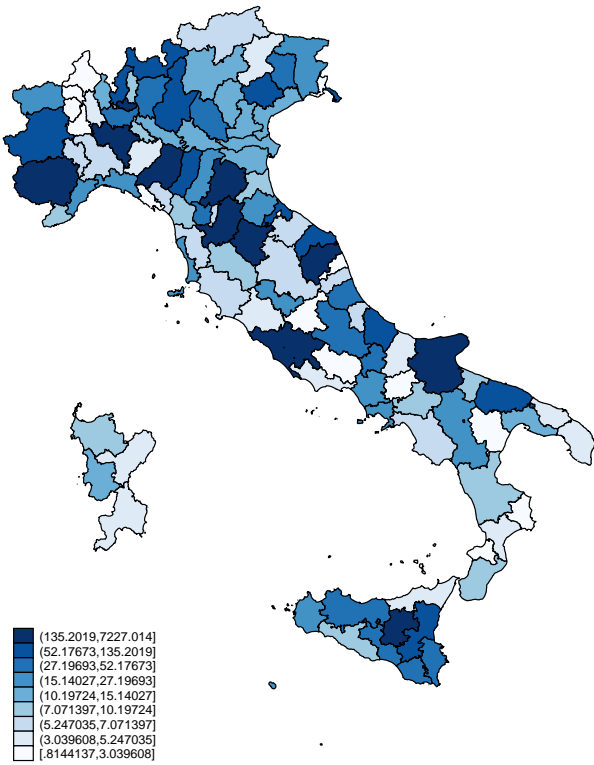
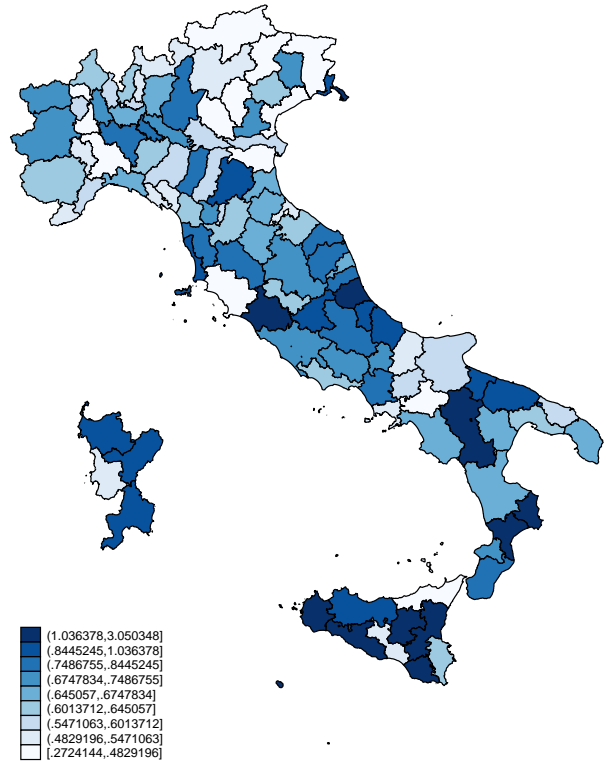


Figure 2: Variation in Turnover (2019 to 2022)



Investigating the riskiness associated to the negative effect of the policy, Figures 4 and 5 provide a very distinct situations where the south of Italy appears to be much more affected both in terms of accounts receivable from customers and regarding the tax credits held by companies. While the graphs and statistics provide an understanding of the overall effect of the Superbonus on real estate building companies. The goal of this paper is to analyse which characteristics have been determinant in deciding whether to adapt the business model to the needs of the policy and how firms' characteristics have affected the overall company management of this period.

Figure 3: Fiscal Credits over Net Operating Income

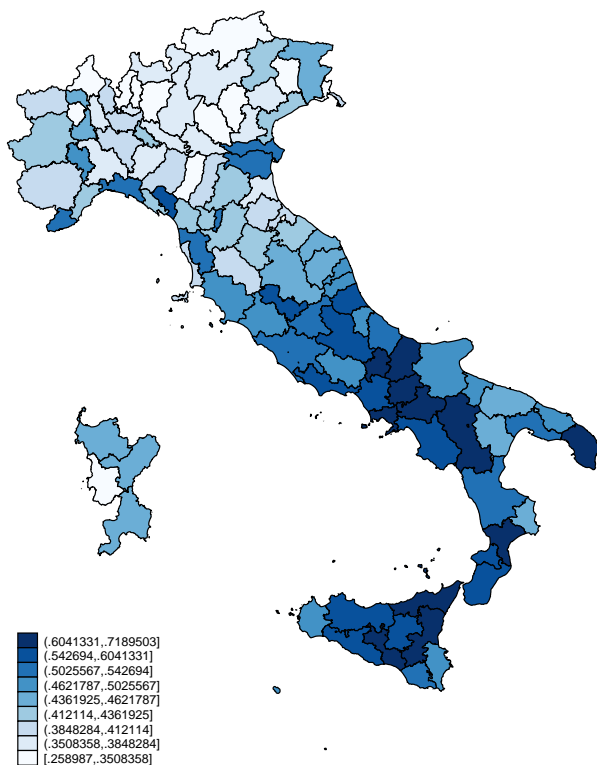
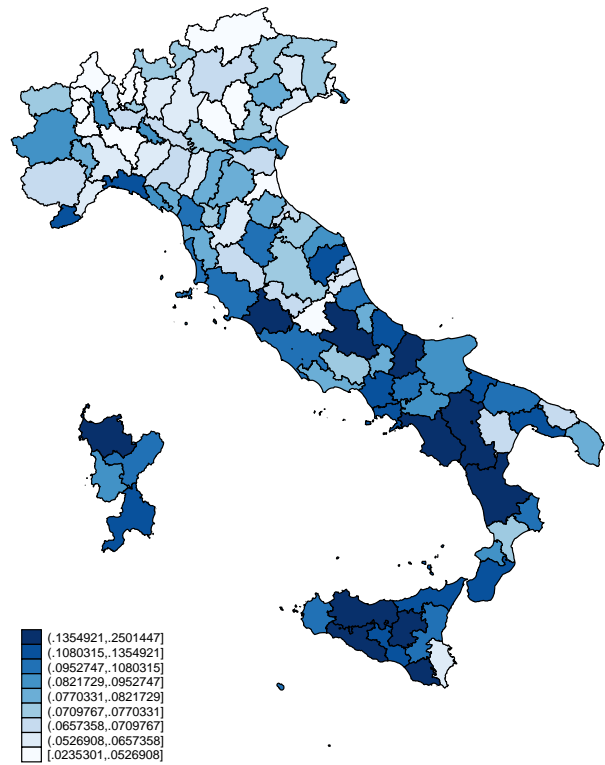


Figure 4: Fiscal credits and credits to clients over turnover



Results. As previously mentioned, the research questions that we aim to answer in this paper, in addition to presenting a descriptive overview of the effects of the Superbonus, concern the firm's characteristics that have increased the likelihood to enter this new market, generated by the policy, and whether there exist some aspects that have facilitated the management of this transition.

Table 2 and 3 in the Appendix provide the results of the effect on the strategy adopted by firms in this period in relation to their overall competence, the organizational structure and the managerial capabilities.

The results show that, although the Superbonus has generated a widespread increase both in terms of business volumes and in the implementation of the new business model, some company characteristics are significant in defining the adopted strategies; indeed, while all three firm characteristics investigated are associated to a more prudent strategy in terms of production volumes, managerial skills appear to have facilitated access to the new market type generated by the introduction of the invoice discount⁵.

With regard to the ability to navigate the policy and find the right balance between performance and risk management, the regression show that the Superbonus has increased the overall riskiness of the sector (the trigger variable is positive and statistically significant in all regressions) which could be amplified in case of a slow down in the real estate market in the following years.

Moreover, Tables 4, 5 and 6 show how all the variables of interest are acting as positive moderator in the management of the fiscal credits. However, while overall competence and managerial capabilities are statistically significant at the 10% level, the organizational structure, despite displaying a negative correlation with the risk measures used in the analysis, does not provide statistically significant results.

Research limitations. The paper is an explorative study that focus on the financial information drawn on the AIDA database that have forced to approximate proxies regarding the company's characteristics. Indeed, future explorations could be expanded through the exploitation of different data sources, such as questionnaires. Moreover, future assessments are essential to provide a comprehensive picture of the impact generated by the policy, as the measure is still ongoing.

Furthermore, since the Superbonus has often been associated with scams related to the non-existence of construction sites for which work was invoiced, and thus tax credits obtained, another aspect of investigation that will need to be taken into consideration concerns this aspect, which to date remains unexplored.

Managerial implications. The managerial implications are several as it delves into the managerial and policy implications of public incentives aimed at fostering sustainable goals. From a policy perspective, it seeks to analyze the effects on private sectors of the use of public resources in the promotion of environmental, social, and economic sustainable goals. Moreover, from a managerial perspective, the paper aims to elucidate the requisite skills for private companies in effectively managing public funds. This is a pivotal aspect within socially significant sectors such as housing, agriculture, and healthcare, as these forms of incentives are frequently employed to bolster them.

Originality of the paper. The best of my knowledge, this study represents the inaugural attempt to explore the effects of one of the most substantial government investments of recent decades on businesses. The novelty of the topic and the data utilized present a subject of significant interest both theoretically and from a managerial standpoint, offering an overview of the real estate sector that could potentially be affected by a forthcoming period of recession.

As previously mentioned, this is our first attempt to delve into this topic, which we intend to explore more deeply in the near future as we wait for the economic cycle to evolve and strive to improve the available data.

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⁵ The invoice discount was already present before the superbonus but in a reduced form and spread over many more years, not representing a problem for the companies.

Appendix

Table 2: Firms' characteristics impact on firm strategy (Aggressive strategy measured as the increase in revenues)

Source	SS	df	MS	Number of obs	=	10,701
Model	303.022324	24	12.6259302	F(24, 10676)	=	5.99
Residual	22494.3295	10,676	2.10699977	Prob > F	=	0.0000
				R-squared	=	0.0133
				Adj R-squared	=	0.0111
Total	22797.3519	10,700	2.13059363	Root MSE	=	1.4516

Revenue variation		Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
Average salary	L4.	-.0034305	.0007061	-4.86	0.000	-.0048145	-.0020465
ROA	L4.	-.3250569	.1793958	-1.81	0.070	-.676706	.0265923
N. of employees	L4.	-.0009587	.0003381	-2.84	0.005	-.0016214	-.0002959
Employees on turnover	L4.	-12.17989	3.159012	-3.86	0.000	-18.37214	-5.987637
Revenues	L4.	1.50e-06	8.78e-07	1.71	0.087	-2.16e-07	3.23e-06
Regional Fixed Effects							

Table 3: Firms' characteristics impact on firm strategy (entering the fiscal credit management business)

Source	SS	df	MS	Number of obs	=	7,242
Model	809922490	24	33746770.4	F(24, 7217)	=	0.36
Residual	6.7614e+11	7,217	93686891.4	Prob > F	=	0.9982
				R-squared	=	0.0012
				Adj R-squared	=	-0.0021
Total	6.7695e+11	7,241	93488222.3	Root MSE	=	9679.2

Credit variation		Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
Average salary	L4.	-4.072634	5.589195	-0.73	0.466	-15.02909	6.883825
ROA	L4.	2584.289	1401.863	1.84	0.065	-163.7734	5332.351
N. of employees	L4.	.1288346	2.279747	0.06	0.955	-4.340137	4.597807
Employees on turnover	L4.	-32657.46	26840.02	-1.22	0.224	-85271.75	19956.84
Revenues	L4.	-.0003724	.0059095	-0.06	0.950	-.0119567	.0112119
Regional Fixed Effects							

Table 4: Firms' characteristics impact on the ability to manage the policy (Organizational structure)

Random-effects GLS regression Group variable: id	Number of obs = 43,693 Number of groups = 9,578
R-sq: within = 0.0490 between = 0.0458 overall = 0.0455	Obs per group: min = 1 avg = 4.6 max = 5
corr(u_i, X) = 0 (assumed)	Wald chi2(24) = 2188.62 Prob > chi2 = 0.0000

Risk Measure	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
Trigger event	.0456987	.0016786	27.22	0.000	.0424088	.0489886
Employees/Revenues	.0969709	.0628745	1.54	0.123	-.0262609	.2202026
Emp./Rev. Treatment	-.3226014	.2025195	-1.59	0.111	-.7195324	.0743296
Average salary	-.0000149	.0000239	-0.62	0.532	-.0000618	.0000319
ROA	-.0013188	.0060702	-0.22	0.828	-.0132163	.0105787
Regional Fixed Effects						

Table 5: Firms' characteristics impact on the ability to manage the policy (Overall Competence)

Random-effects GLS regression Group variable: id	Number of obs = 43,559 Number of groups = 9,522
R-sq: within = 0.0515 between = 0.0473 overall = 0.0470	Obs per group: min = 1 avg = 4.6 max = 5
corr(u_i, X) = 0 (assumed)	Wald chi2(24) = 2286.03 Prob > chi2 = 0.0000

Risk Measure	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
Trigger event	.0538156	.0020953	25.68	0.000	.0497088	.0579224
Average Salary	7.63e-06	.0000235	0.32	0.746	-.0000385	.0000538
Avg. Salary Treatment	-.0002623	.0000458	-5.73	0.000	-.0003521	-.0001725
Employees/Revenues	.1066473	.0614744	1.73	0.083	-.0138403	.2271349
ROA	-.0008306	.0059481	-0.14	0.889	-.0124887	.0108275
Regional Fixed Effects						

Table 6: Firms' characteristics impact on the ability to manage the policy (Managerial ability)

Random-effects GLS regression Group variable: id	Number of obs = 43,735 Number of groups = 9,595
R-sq: within = 0.0492 between = 0.0448 overall = 0.0453	Obs per group: min = 1 avg = 4.6 max = 5
corr(u_i, X) = 0 (assumed)	Wald chi2(24) = 2190.80 Prob > chi2 = 0.0000

Risk Measure	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
Trigger event	.0445156	.0011306	39.37	0.000	.0422996	.0467316
ROA	-.0019484	.0060707	-0.32	0.748	-.0138467	.0099499
ROA. Treatment	-.0213997	.0116184	-1.84	0.065	-.0441713	.0013719
Average salary	-.0000156	.0000239	-0.65	0.514	-.0000623	.0000312
Employees/Revenues	.0942433	.0628628	1.50	0.134	-.0289656	.2174522
Regional Fixed Effects						

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Track 12
**Supply Chain Management,
Logistics & Operations**

Who Should Pay for the Returns Product? The Effect of Transparency on Consumers' Decision-making across the Reverse Supply Chain

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Abstract

The increasing volumes of consumer returns present a growing challenge for retailers, significantly impacting sustainability across all three dimensions of the triple bottom line: environmental, social, and economic. Concurrently, consumers are expressing increasing concerns about the environmental impact of returns. Given these concerns and the increasing involvement of consumers in logistics and supply chain management processes, it becomes imperative for retailers to consider empowering consumers as active decision-makers in the returns management process. Achieving this requires integration of consumers' decisions with a triple bottom line perspective, to align efficient returns management with an enhanced consumer experience. In this study, we investigate how transparency of returns' triple bottom line impact influences consumers' decision-making regarding returns. Drawing on the self-efficacy theory and the concept of psychological distance, we elucidate the social and psychological factors that drive consumer choices. We conduct a series of experiments to address our research questions. Our main study is informed by initial insights derived from a focus group method, followed by a series of complementary experiments, including both a scenario-based and a stated choice study. Our main contribution to the literature extends the existing knowledge on returns by examining the context of consumer decision-making about returns through the lens of psychological mechanisms. Furthermore, our research offers practical insights for retailers by illuminating the alignment of sustainable business goals with an optimal consumer experience in the realm of returns.

Key words: returns; triple bottom line; information disclosure; avoidance; gatekeeping; consumer decision-making; logistics and supply chain management

Framing of the research. Consumer returns are an increasing issue for retailers. Returns accounted for about US\$800 billion in 2023, corresponding to 14.5% of total retail sales (National Retail Federation, 2023). The surge in return volumes, primarily driven by lenient return policies, poses substantial sustainability challenges (Abdulla et al., 2022). However, consumer returns are not just an economic problem for retailers; they also negatively impact the environment and society (Paul, 2024), as reflected in the triple bottom line perspective (Elkington, 1998). Annually, 9.5 billion pounds of returns end up in U.S. landfills, while the process of handling returns generates 24 million metric tons of carbon dioxide (Optoro, 2022). Consumers recognize the looming ecological catastrophe and are increasingly concerned with the environmental impact of returns. According to the ReBOUND consumer survey in 2020, “74% of consumers say that they intend to shop more with brands that are making their delivery and returns processes more sustainable”, while 71% of shoppers reveal that “they’d be willing to pay more to return via a more sustainable return option” (IMRG, 2021). In terms of the social impact of returns, retail workers’ paychecks are negatively affected by lost commissions due to opportunistic and fraudulent returns (Abrams, 2016).

In recognition of the acute consequences that stem from ignoring consumer returns, retailers place efficient management of returns and consumer experience among their top three priorities (Optoro, 2023). To address the first goal, the retailers leverage returns avoidance and gatekeeping actions aimed at reducing return volumes and tackling the sustainability challenges at hand. Gatekeeping includes all actions that prevent unwarranted returns (Rogers et al., 2002), such as J. Crew’s US\$7.50 return fee. Returns avoidance involves developing and selling a product to minimize return requests (Rogers et al., 2002). For example, the partial refund (i.e., an opt-out discount) offered by Threadup.com allows dissatisfied consumers to keep the item without returning it. Both actions have potentially negative consequences for consumer experience.

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One way for retailers to address the goal of improving consumer experience is to move beyond the one-size-fits-all return policies and empower consumers to play a more active role as decision-makers in the return process. Up to now, the literature has investigated the factors that drive managerial decision-making concerning returns, where consumers are only considered as passive recipients of such decisions. Abdulla et al. (2022) find that consumers strongly prefer policies without return fees; however, offering free return shipping implies that costs outweigh gains for retailers (Patel et al., 2021). Thus, free returns are not an optimal option for retailers. In the realm of supply chain transparency, existing literature suggests that information disclosure can enhance consumers' willingness to pay (WTP) for products and services (Duan et al., 2019; Jiang et al., 2021). In sum, as consumers become more involved in logistics and supply chain management processes (Esper et al., 2020; Daugherty et al., 2019) and more concerned about returns impact (IMRG, 2021), it is crucial for retailers to integrate consumer decision-making about returns with the triple bottom line perspective to align their priorities, i.e., efficient management of returns and consumer experience.

Purpose of the paper. Our study delves into returns avoidance and gatekeeping activities where sustainability concerns drive retailer-consumer negotiations in a novel B2C2B perspective. Specifically, we are interested in examining how the transparency of returns' impact in terms of triple bottom line dimension affects consumers' decision-making about returns. We propose to answer to the following research questions:

RQ1. Will consumers pay a premium for sustainable returns?

RQ2. Will consumers accept a price discount to opt out of returns to help retailers meet sustainable goals?

To address these research questions, we draw upon the self-efficacy theory (Bandura, 1977; Basil et al., 2008) and the concept of psychological distance (Simpson et al., 2021; Trope & Liberman, 2010; Viet et al., 2023) to explain the social and psychological factors that drive consumer choices. More specifically, according to the self-efficacy theory, individuals' expectation of efficacy of personal behavior determines how much effort will be expended: the stronger the perceived self-efficacy, the more active the efforts. In fact, individuals' perception that their behavior leads to a certain outcome influences the choice of behavioral activities and settings (Bandura et al., 1977).

The concept of psychological distance originates from the construal level theory (Trope & Liberman, 2010), which provides a conceptual framework to explore how individuals process information and its effects on decision-making (Wiesenfeld et al., 2017). The construal level theory and psychological distance have been widely applied to investigate decision-making in other business domains, such as marketing and organizational behavior, but they have seen limited use in logistics and supply chain management. Psychological distance manifests in four primary dimensions - temporal distance (events that occur further away in the past or future); spatial distance (separated by geography); social distance (persons and cultures that are unfamiliar, or in-groups and out-groups); and hypothetical distance (lack of experience or low probability of events) (Simpson et al., 2021; Trope & Liberman, 2010; Liberman & Trope, 2014). In the context of supply chains, psychological distance holds particular relevance due to its pervasive presence in decision-making processes. Higher psychological distance generally corresponds to decision-makers' reduced awareness of specific details or the practical implications of decisions, leading to more abstract representations of objects, events, persons, and ideas. Consequently, decision-making tends to rely more on abstraction (Soderberg et al., 2014). The manipulation of psychological distance can significantly impact decision outcomes by influencing information processing (Henderson et al., 2006; Ledgerwood et al., 2010; Kirshner & Moritz, 2022). Individuals consistently adapt their behavior in accordance with changes in mental abstraction. During the final product purchase, consumers operate within a concrete mindset; therefore, they tend to exhibit stronger responses to information and issues with low psychological distance compared to those with high psychological distance (Dhar and Kim, 2007). Importantly, the psychological distance is not fixed and can be addressed and reduced through access to information (Simpson et al., 2021).

In this study, we focus on the concept of supply chain transparency as a key building block of our investigation. It is important to address the definition of this key variable as well as its adaptation and operationalization within the context of our research questions. Sodhi and Tang (2019) define supply chain transparency as the disclosure of information to the public, including consumers and investors, about the company's upstream operations and about the products it sells to consumers. Sodhi and Tang (2019) also make a case for the need to broaden this definition to include the focus of this definition to include the downstream operations in order to study the phenomena of supply chain transparency comprehensively. In the context of our study, we are interested in the disclosure of the sustainable impact of returns to consumers, which aligns with the literature on environmental sustainability disclosure (Duan & Aloysius, 2019; Mollenkopf et al., 2022). We are also interested in examining the role of supply chain transparency of different sustainability dimensions, in terms of the triple bottom line (environmental, social, economic), in the consumer decision-making process (Lee Park et al., 2023) in the specific context of returns. Hence, we build on the definition of Sodhi and Tang (2019) and we adapt it to address the specifics of our research questions. For the purpose of this study, we operationalize supply chain transparency as information disclosure about sustainable return management practices in terms of triple bottom line sustainability dimensions - environmental, social, and economic.

Methodology. The context of our research is the electronics industry. We choose this focus because the continuous increase in global electronic waste (e-waste) is one of the most alarming issues of today, as the disposal of electronic components threatens both human health and the environment (Shittu et al., 2021). According to Koshta et al. (2022), "no prior research has examined the influence of various psychological factors on end user's willingness to pay for e-waste recycling". Our study helps address this contextual gap by exploring consumers' e-waste return behavior through evaluation of their decision-making related to the return process (Ni et al., 2023).

As a first step in the research development, we start with a qualitative analysis, conducting a focus group as an effective means of exploratory data collection (Belzile and Öberg, 2012). The focus group aims to inform the research

and to ground it in practical relevance, through the formulation of general research questions based on the main goal of the research. The chosen sample of consumer participants allows us to investigate the main factors that affect consumers' choices and behavior related to returns. The focus group enables us to observe within-group interactions, which helps gain perspective on multiple facets of consumer decision-making and behavior formulation as compared to one-on-one interviews (Krueger 2014). The focus group delves into the understanding of consumers' behavior regarding returns with a specificity on electronic products. The study homes in on consumers' knowledge and awareness of the impact of returns, then focuses on the main factors affecting consumers' decision-making about returns.

Once the first analysis is conducted to inform the study, we will conduct a series of complementary experiments (Louviere et al., 2000): a scenario-based and a stated-choice study. The scenario-based behavioral experiment tests for the effect of transparency of the returns' impact on consumers' decision-making about returns. This method is chosen to isolate effects that are difficult to observe in noisy field environments (Rungtusanatham et al., 2011). The independent and manipulated variable is the transparency of returns' impact, which is operationalized as disclosure of the negative environmental impacts of returns to which consumers are sensitive. The independent variables are consumers' willingness to pay for returns and the discount accepted to opt out of returns. The mediator variable comes from the self-efficacy theory, while the moderating variable is the psychological distance, which is also manipulated.

The final step of our investigation is conducted through a stated-choice study where consumers are asked to choose their preferred option from a set of returns alternatives, each described by specific levels of sustainability attributes (Green & Srinivasan, 1990; Orme, 2020), in line with the triple bottom line perspective. In this experiment, the respondents will face multiple hypothetical sustainable return choices, where profiles of the alternatives systematically vary. Based on the chosen return option, we derive preferences towards alternatives and attributes, as well as determine consumers' willingness to pay and a level of discount to opt out of returns to help meet the retailer's sustainable goals.

Expected results. We expect to find a significant causal relationship between retailer information disclosure related to the impact of returns (i.e., transparency) and consumers' decision-making about returns. More in detail, we expect to find a positive relationship between transparency and consumers' willingness to pay for sustainable returns, and a negative relationship between transparency and accepted price discounts to opt out from returns to help retailers meet sustainable goals. Moreover, we expect the main causal relationship to be fully mediated by consumers' perceived self-efficacy and moderated by the psychological distance; increasing self-efficacy will positively mediate the relationship while increasing psychological distance will reduce the causal effects. These mechanisms will allow us to explain the social and psychological factors that drive consumer choices.

Research limitations. One of the limitations of this study pertains to the scenario-based experiment, specifically in the reliance on measuring consumers' intentions as opposed to their actual behavior. However, we mitigate the limitation by incorporating a complementary and supplementary experimental approach, namely the stated choice experiment. This approach enables the capture of intricate trade-offs, requiring consumers to make decisions within realistic constraints (Green & Srinivasan, 1990). The potential for future research emerges from this study, presenting opportunities for further exploration, such as conducting field experiments involving real retailers. Additionally, our study is product context-specific in terms of its focus on electronic products. While this focus limits the generalizability of our results, it encompasses multiple attributes of the general consumer product market. Future studies should examine the relationship in question within different product markets.

Managerial implications. From a managerial perspective, this research provides retailers with insights on aligning sustainable business goals with optimal consumer experience in the context of returns. Specifically, it can help find an equilibrium between cost-management goals and enhanced customer service levels. If transparency about returns positively affects consumers' willingness to pay for sustainable returns and/or accept a discount to opt-out from returns, the retailers should engage in a two-way communication with the consumers when managing returns. This would allow retailers to achieve their priorities of efficient management of returns and consumer experience by also tackling the triple bottom line sustainability challenges.

Originality of the paper. The originality of our research resides in its theoretical implications. In fact, our research contributes to the literature in three primary ways. First, we extend the literature on the active role of consumers in returns management. We do so through the inclusion of theoretical lenses of self-efficacy and psychological distance derived from the field of social psychology. Second, we contribute to the literature on returns by evaluating consumer response to the impact disclosure in terms of the triple bottom line perspective. In doing so we place a piece in the puzzle of literatures related to the returns management, supply chain transparency, consumer behavior and sustainability impact in term of triple bottom line. Third, from a methodological perspective, our research design demonstrates an effective approach to combining an exploratory and informative qualitative analysis and complementary experimental designs to support a unified causal inference and to provide a more integrated and complete view of the novel B2C2B perspective.

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Modern slavery in mining supply chains: the role of social enterprises and the institutional context

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Abstract

Our research focuses on evaluating the impact of institutional pressures and agency effects on modern slavery in mining supply chains in Africa. We studied the policies, challenges, practices, and supply chain's actors involved in understanding how interventions can mitigate modern slavery and promote sustainable development. In particular, we explored the role of social enterprises in modern slavery, such as those empowering women in the mining sector to address gender inequality and promote economic empowerment. By adopting a case study approach and through a combination of literature review, desk research, and interviews, we aim to provide insights that can contribute to institutional and agency theories' development and support effective strategies to combat modern slavery in mining supply chains, to achieve the Sustainable Development Goals in Africa.

Keywords: modern slavery, supply chain, institutional theory, agency theory, esg, mining, Africa

Framing of the research. Africa continues to face numerous Environmental, Social and Governance (ESG) challenges, such as poverty, hunger, lack of access to good health care, lack of development, gender inequality, lack of clean water, and environmental issues (Juju et al., 2020). These challenges not only hinder the overall progress and development of the continent but also affect the quality of life of its inhabitants (Zaman et al, 2023). This objective can be achieved under the United Nations Agenda 2030 Sustainable Development Goals (SDGs), which aim to address social challenges without forgetting the environmental ones (Omisore, 2018).

Modern slavery, particularly in the supply chain, represents one of the challenges faced by Africa. The International Labour Organization (ILO) defines modern slavery as a broad category that encompasses various forms of forced labour, including indentured labour, debt bondage, forced labour, servitude, and human trafficking. The exploitation of labour, especially in industries like mining, agriculture, and manufacturing, perpetuates poverty, inequality, lack of development (Gold et al., 2015), and environmental degradation (Sparks et al., 2021). The supply chain's unethical practices violate human rights and undermine efforts to achieve the SDGs. Hence, it is crucial for businesses and organisations to address modern slavery in their operations to contribute to sustainable development and social justice in Africa (Moussa et al., 2022).

The characteristic of modern slavery that distinguishes it from the ancient concept of slavery is its foundation on the exercise of specific powers over human beings rather than on direct property, which is currently illegal almost everywhere (Crane, 2013). As such, there are various antecedents that create the conditions for power to be exerted over workers, especially in global supply chains (Hilend et al., 2023). Among socioeconomic factors, poverty and lack of social mobility play a critical role, creating a fertile environment for any kind of labour exploitation (Crane, 2013; Hilend et al., 2023). Moreover, when the population does not have the economic and educational resources to invest in their way of life, it raises the risk of the so-called "poverty trap", where extreme poverty levels persist because of this lack of awareness (Penh, 2009). Among the regulatory factors, political instability and weak governance favour firms' likelihood of adopting modern slavery behaviours (Crane, 2013; Hilend et al., 2023).

Supply chain management (SCM) literature has demonstrated the positive relationship between the adoption of ESG practices and the supply chain performance, at least in the long term (Zhu & Sarkis, 2004; Zhu and Sarkis, 2006; Lee et al., 2012; Le et al., 2022; Truant et al., 2024). However, the work of New (2015) highlighted that modern slavery differs

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from other ESG issues and necessitates specific attention, as the standard anti-modern slavery ESG initiatives can be seen as part of the enabling mechanism that allows this issue to persist: indeed, although policy statements and sustainability disclosure of firms might appear to be fighting against the problem, “the brutal exercise of commercial power, hard negotiation on prices and trading terms generates the conditions in which forced labour emerges” (p.703). However, research on modern slavery within business and management discipline remains highly underdeveloped. Under the framework of SCM, there is inadequate attention to the effects of core SCM practices in giving rise to modern slavery (Caruana et al., 2021). Flynn and Walker (2020, p. 296) acknowledge the suitability of using the institutional theory view to study modern slavery as the institutional context “is imposed on firms from the outside by legislation, non-government organisation (NGO) campaigning, professional standards, stakeholder initiatives, media coverage, and consumer activism.” In the same vein, Moussa et al. (2022) provide evidence supporting institutional theory's role in the study of modern slavery. Their research revealed that nations with robust institutions, increased democratic practices, better regulatory standards, greater press freedom, and improved corruption control demonstrate higher accountability and responsiveness to modern slavery threats. Moreover, the occurrence of modern slavery practices in supply chains may be limited or inhibited by the monitoring, governing, and enforcing of regulations related to illegal natural resource extraction (Hilend et al., 2023). However, the most influential contribution to modern slavery in the management literature was provided by Crane (2013), who conceptualised modern slavery as an institutional deflection. As a matter of fact, he offers a comprehensive and perceptive model demonstrating how the ongoing presence of modern slavery poses a theoretical challenge for institutional theory. He elucidates how illegitimate practices can endure over time within the gaps of prevailing regulative, normative, and cultural-cognitive systems. Essentially, his model seeks to elucidate the viability of modern slavery despite its contradiction to the primary institutional dynamics in contemporary societies.

In this context, two theoretical frameworks offer insights into introducing ESG criteria in supply chains to contrast modern slavery. On the one hand, institutional theory's view suggests that such practices should diminish over time due to the impact of prevailing regulative, normative, and mimetic pressures fostering isomorphism (Scott, 2001). Institutional theory in SCM has been widely studied as it may explain how external drivers promote sustainable SCM practices (Sarkis et al., 2011). Normative pressures from consumers have driven the adoption of sustainable SCM practices for downstream firms (Ball & Craig, 2010), inducing buyers to exert normative pressure over upper-tier suppliers to enforce the sustainability of the overall chain. Nonetheless, the continued presence of isolated instances of slavery indicates that within specific contexts, structural inertia resists broader societal changes and environmental shifts (Hannan & Freeman, 1984), revealing that the institutional pressures that delegitimise slavery are somehow diverted by both external and internal contingencies (Crane, 2013). In this regard, agency theory offers indeed valuable insights into supply chain management (Fayezi et al., 2012), shedding light on the relationships between upper and lower-tier supplying firms, as well as between the focal buyer and upper and lower-tier supplying firms (Aßlander et al., 2016; Wilhelm et al., 2016). By acknowledging the inherent information asymmetry and potential for opportunistic behaviour within these complex networks, agency theory helps design governance mechanisms that incentivise efficient and trustworthy behaviour from agents towards the principal. This ultimately contributes to smoother information flow, reduced transaction costs, and improved overall supply chain performance (Panda and Leepsa, 2017). Indeed, as modern slavery instances typically occur in the upstream, geographically isolated and most labour-intensive stages of the supply chains (Crane, 2013), principal-agent relations are crucial to fight modern slavery since the principal's social responsibility might lead to the resolution of conflicts of interests and the introduction of contractual incentives and information transparency, which have a proven positive influence on the effective adoption of ESG practices of upper-tier suppliers (Wilhelm et al., 2016).

Purpose of the paper. Our research focuses on evaluating the impact of institutional pressures and agency effects on modern slavery in the mining sector in Africa. By adopting a multiple case study approach, we studied the policies, practices, and actors involved in the sector to understand how interventions can mitigate modern slavery and promote sustainable development. Particularly, we explore the role of a social enterprise (Doherty et al., 2014), which empowers women in the mining sector to address gender inequality and promote economic empowerment. We conceptualize this organization as a hybrid organization (Pache & Santos, 2012), as “by spanning the boundaries of the private, public and non-profit sectors, they bridge institutional fields [...] and face conflicting institutional logics” (Doherty et al. 2014, p.418). As a matter of fact, this organization occupies a particular position into the mining supply chain, being a connector between mining communities/workers and mining companies. This supply chain positioning leads the organization to span different institutional domains and face potentially conflicting pressures. Thus, we investigate if this actor is legitimated by both sides and if it acts as a principal or an agent in the promotion of ESG practices in the mining supply chain, with a particular reference to anti-modern slavery practices. Finally, we try to uncover, from an institutional point of view, if the presence of a hybrid organization in the mining supply chain facilitates the elimination of modern slavery practices, limiting the institutional deflection phenomenon envisioned by Crane (2013). Through a combination of literature review, desk research, and interviews, we seek to provide insights that can contribute to institutional and agency theory and that can support effective strategies to combat modern slavery and achieve the SDGs in Africa.

Methodology. The research employs a case study approach (Yin, 2014), mainly based on several interviews conducted with representatives of the focal social enterprise, working and living in different African countries. The interviews' evidence was complemented by collecting secondary information and integrating it with other interviews from other sources, i.e. mining industry experts who have directly worked in the sampled African countries.

We first conducted two desk research activities, one related to exploring the normative frameworks of the sampled African countries and the other related to the review of ESG challenges in the mining sector. The first desk research was mainly on grey literature, composed of governmental reports and laws, consulting firms' reports, outlooks, sustainability

reports and mining company websites. This search informs the study of the institutional context of the different case studies considered as part of our sample. The second desk research was structured as a literature review of contributions from scientific peer-reviewed journals. We included papers dealing with ESG issues and the mining context published until 31st dec 2023. We used keywords such as environmental, social and governance or corporate social responsibility and mining or extractive and challenge or issue. The outcomes of the review led us to map the relevant sustainability challenges under the mining context's three ESG pillars (Environmental, Social and Governance). The ESG dimensions inform the design of the protocol for the interviews conducted with the organization representatives and with the other experts.

After two desk research, we formulated an interview protocol for in-depth semi-structured interviews based on previous results. We then selected 15 experts in the African mining sector to validate the regulatory framework contexts and the ESG challenges detected. We selected the informants based on a shared database of partners and stakeholders of AfricaMaVal, a Horizon Europe project on Sustainable Mining. We then added a snow-balling technique to identify further informants, based on the first sample. The validation step allowed us to identify which were the crucial challenges on the ground, and the country specific ones. Moreover, we identified with a more precise degree causes and effects of the challenges. We went much further in respect to the indirect observation through desk research and this was essential to structure the interview protocol for the following phase.

Considering our focus, the fourth and last phase consisted in interviewing the social enterprise's components in the different sampled countries. The social enterprise selected has been currently pseudonymized because, due to their job, they have been several times subjected to threats and verbal attacks. The interviews protocol was based on the results of the previous three phases, with the specific goal to understand how they perceive and react to different institutional pressures and their role in pursuing the ESG challenges faced by the mining communities/workers, with a particular focus on modern slavery. The interviews are still ongoing, and they are supposed to end in May 2024. In addition, by interviewing the social enterprise's members, we also limited the social desirability bias (Bergen and Labonté, 2020). In fact, some practices of modern slavery can be at the border of illegality and, in any case, damage the company's reputation. Therefore, interview mining companies may face this risk. At the same time and for the same reasons, including possible threats, we decided to exclude miners because of their possible problems in administrating such practices and, also, considering the possible consequences on their jobs.

Table 1 presents the different steps of data collection.

Table 1: data collection phases

DC phase	Phase 1	Phase 2	Phase 3	Phase 4
Method	Grey literature desk research	Literature review	Interviews with mining experts	Interviews
Objective	Explore the normative frameworks of the African countries under study	Map relevant ESG challenges in the mining sector	Validate the regulatory framework contexts and the ESG challenges detected	Explore the role of a social enterprise in contrasting modern slavery practices in mining supply chains
Data collected	Governmental reports and laws, consulting firms' reports, outlooks, sustainability reports and mining company websites	78 scientific papers	15 interviews	On-going

Results. As this research represents an on-going project, complete results still cannot be provided. Nevertheless, we expose some preliminary results. Phase 1 has targeted Democratic Republic of Congo, Gabon, Madagascar, Morocco, Mozambique, Namibia, Senegal, South Africa, Tanzania, and Zimbabwe. At the end of this phase, we obtained a clear pictures of mining policies in those countries. We primarily identified the social, economic, technological and environmental context of each country. Then, we review mining and mineral policies, taking care about gender issues, land-use and mineral rights, taxation and royalties, environmental and water issues, societal and community aspects, including artisanal and small-scale mining, tangible and intangible cultural heritage, and health and safety in mines. Phase 2 led to detect 270 ESG challenges, of which 85 were attributed to the environmental pillar, 117 to the social pillar and 68 to the governance one. The environmental pillar covers 8 dimensions (Air, Biodiversity, Energy, Land, Materials, Noise, Waste, Water). The social pillar has 3 dimensions (Indigenous People, Local Community, Workforce). The governance pillar has instead 5 dimensions (Business Ethics, Corporate Structure, Policies, Stakeholders, Supply Chain). All of the dimensions cover various sub-dimensions which are omitted here.

Combined results of phases 2 and 3 show that there is a great focus on challenges which happen at the local level, on all the three pillars. Environmental, social and governance issues detected jointly indicate that without poverty alleviation sustainability cannot be reached in the mining context: poverty is the cause of poor working conditions (i.e, both social and environmental) which, at the same time, foster a perpetuation of poverty, installing a vicious cycle. Our results show that poverty affects both social, environmental and governance dimensions. As a matter of fact, from the environmental point of view, poor working conditions lead to the use of cheap processing substances, i.e. mercury and cyanide, which are highly polluting for water and soil. From the social perspective, poverty sustains the existence of scarce employment

conditions among the mining workers: this ranges from artisanal miners which daily works without tools and protections, being exposed anytime to toxic substances, to the phenomenon of school dropout with kids following their parents in the working activities, perpetrating the same conditions generations over generations. Finally, regarding the governance pillar, poverty affects public policies implementation. The most serious and widespread issue is corruption which happens at all stages of the mining supply chain and normally regulates institutional relationships. Corruption leads to a difficult enforcement of policies, even where advanced legislative frameworks are present, as in the case of mostly all African countries. Our interviewed experts detected corruption is mainly led by poverty, as government officers see it as a normal and due compensation to compensate very poor salaries. Public policies implementation is also related to lack of public resources, again caused by poverty.

These results sustain our inquiry of modern slavery driven by poverty in the mining sector, its link with institutional factors, and the analysis of the role that the social enterprise under study may play in promoting anti-modern slavery practices. Further results will be available once the fourth phase, the round of interviews with the social enterprise, will be carried out and the impact of institutional pressures and agency effects on modern slavery in the mining sector in Africa will be clear.

Research limitations. Our research presents some limitations. First, our desk research has highlighted the poor available scientific outputs on the mining sector in the African context. This led us to the need of interviewing experts, which although carefully selected, expressed their opinions based on their personal experience, which could be biased in several ways. Moreover, in the fourth phase, the presence of safety threats impeded us to reach mining workers.

Managerial implications. Our paper presents interesting managerial implications both for interested scholars and practitioners. Addressing modern slavery in the supply chain is crucial for businesses and organizations to uphold human rights, promote social justice, and contribute to sustainable development on the continent.

Originality of the paper. The study of modern slavery inside the management literature lacks empirical contribution, thus we believe that our paper is an important step towards the development of modern slavery stances in the supply chain management literature. Moreover, to the best of our results, previous scholars have not yet delved in modern slavery with a combined institutional and agency theories' perspective, using the context of the mining sector in Africa.

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Triadic literature in sustainable supply chain management: paving the way

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Abstract

The current global scenario is characterized by complex challenges, including urgent environmental and social issues. Addressing these “grand challenges” requires the adoption of a broad perspective: supply chains are formed by multiple entities that, operating across diverse economic, social, and environmental systems, form an intricate network with wide impacts. Thus, in order to investigate the potential of their interactions on tackling such issues determines the need for a multi-tier approach, leveraging the interconnectedness of actors within the supply chain. Driven by mounting environmental concerns and stakeholders’ pressures, sustainable supply chain management (SSCM) has received great attention. However, while previous SSCM research predominantly focuses on a single organization or, at most, on its dyadic relationships with first-tier suppliers, it is increasingly evident that sustainability efforts must extend further in the supply chain to yield significant impacts. The triadic approach, which allows to grasp a multi-tier perspective and to achieve insights on supply chain or even network phenomena, can provide an extended and nuanced understanding of SSCM, acknowledging its inherent complexity and multi-tier nature. Despite its potential, triadic and multi-tier research in SSCM remains scarce, suggesting a need for further adoption and exploration. This study conducts a systematic literature review of triadic research to inform of the state-of-the-art, encouraging further studies that can grasp the complexity of supply chain interactions and dependencies on performance - and specifically on sustainable performance.

Key words: Sustainable supply chain management; triadic relationships; systematic literature review

Framing of the research. *As a global society, we are facing urgent issues that need to be tackled, such as geopolitical, economic uncertainty and increasing environmental and social concerns (George et al., 2016; Rosca et al., 2022). These issues, also defined as “grand challenges” can be addressed through multi-level action (Rosca et al., 2022), by leveraging the global dispersion and embeddedness of multiple actors in the supply chain. These actors operate in different economic, social and environmental systems, still they are tied together forming a network (Håkansson & IMP Group, 1988; Montabon et al., 2016), thus the impact of their decisions and actions spreads over. Therefore, it is pivotal to address such issues from a broader level of analysis, going beyond the internal or dyadic buyer-supplier perspective (Gammelgaard, 2023; Miemczyk et al., 2012) to adopt a supply chain or network point of view, allowing for a more comprehensive understanding of the intricate relationships and dependencies among supply chain entities.*

Ever-growing environmental concerns are driving businesses to look for ways to combine operational and financial outcomes with environmental performance. Also, firms are further pressured by legislators and governments as well as by consumers’ awareness and sensitivity towards the matter (Marculetiu et al., 2023). Considering that the greatest part of the environmental impact of most companies is not under their direct control, but it derives from activities and processes that happen along their supply chain (Eggert & Hartmann, 2021; Sundarakani et al., 2010), it is required that a company’s entire supply chain is managed with a sustainable approach in order to generate a significant impact. Coherently, there has been a surge of interest in sustainable supply chain management (SSCM) (Carter et al., 2019): in this stream of literature, most current research approaches have been derived from internal or dyadic supply chain management research (Kembro et al., 2017; Sauer & Seuring, 2018), only involving first-tier suppliers (Tachizawa & Wong, 2014). However, firms are realizing that managing the sustainability of these suppliers may not be enough (Carter et al., 2019; Tachizawa & Wong, 2014). In fact, collaboration with lower-tier suppliers (Sancha et al., 2019) and engagement with other non-supply chain stakeholders (Carmagnac, 2021) are seen as critical for improving SSCM (Fritz & Ruel, 2023). As an illustration, it is noteworthy that up to 80 percent of overall climate impact of many companies consists of Scope 3 emissions, which represent indirect emissions produced along the supply chain (McKinsey&Company, 2021). Thus, focusing on sustainability beyond the four walls (Carter et al., 2019) and extending the view on SSCM

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towards multi-tier perspectives (Fritz & Ruel, 2023; Tachizawa & Wong, 2014) is necessary in order to generate the greatest overall impact. Such an extension implies the investigation of a firm's relations beyond dyadic relationships (Mena et al., 2013; Sauer & Seuring, 2018).

Previous research has established that, when aiming to grasp a multi-tier perspective and to achieve insights on supply chain or even network phenomena, an investigation needs to take into consideration at least three actors and their relations (i.e. a triad) as the unit of analysis (Choi & Wu, 2009a; Vedel et al., 2016). Indeed, triads represent the smallest (thus, tractable) unit of analysis which also allows for the investigation of relational dynamics, i.e. how a link affects another link and how a node affects another node (Tate et al., 2022). Differently, Choi & Wu (2009b) criticized the dyadic approach to researching supply chains, arguing that dyads do not capture the complexities of networks. Therefore, triads represent a useful starting point for understanding the interdependencies of sustainable supply chain management (Choi & Wu, 2009a), which involves multiple levels of analysis and is determined by the interplay of decisions and actions of various organizations and actors.

Purpose of the paper. This research aims to sensitize the logistics and supply chain management community to the extant research on triadic structures, highlighting its potential as well as its complexities, specifically in the field of SSCM. To reach this aim, a systematic literature review (SLR) has been produced (Denyer & Tranfield, 2009).

Methodology. A SLR has been conducted following established guidelines (Denyer & Tranfield, 2009; Tranfield et al., 2003) to secure methodological rigor. The process includes five practical steps. In the first step, the following research questions have been formulated:

RQ 1: Which facets of SSCM have been investigated through a triadic approach?

RQ 2: What other main themes have been investigated in triadic research?

RQ 3: What inter-organizational triadic structures are investigated in this literature?

In the second step, studies are located and selected through Scopus database and Web of Science (WoS). Consistently with previous literature reviews, "triad*" - limited in the subject area of Business, Management and Accounting - is used as a keyword in the search query to include variations and derivations (Vedel et al., 2016; Wynstra et al., 2015).

In the third step, inclusion and exclusion criteria are defined and applied to go from a sample of potentially relevant literature to the final sample. The search is limited to peer-reviewed articles, while conference proceedings and other reports were excluded to ensure quality and consistency; no year limits were imposed and all research methods were maintained in the final sample (Durach et al., 2017). The search is also restricted to nine SCM journals, whose scope is coherent with the aim of the investigation and which are recognized as encompassing the primary outlets for empirical SCM research (Carter et al., 2019). Their impact factors were also considered (Gligor et al., 2018).

The selected journals are:

1. *Journal of Business Logistics*;
2. *Journal of Operations Management*;
3. *Journal of Purchasing and Supply Management*;
4. *Journal of Supply Chain Management*;
5. *International Journal of Operations and Production Management*;
6. *International Journal of Physical Distribution and Logistics Management*;
7. *Supply Chain Management: An International Journal*;
8. *The International Journal of Logistics Management*;
9. *Transportation Journal*.

Moreover, as triadic relationships literature has been enriched with contributions not only from supply chain management operations management but also from marketing (Mena et al., 2013), it is reasonable to consider that relevant studies may also be published in other journals. Thus, two more journals were added to the list:

10. *Journal of Business and Industrial Marketing*, given its focus also on supply chain issues (Gligor et al., 2018);

11. *Industrial Marketing Management*, given its focus on industrial and business-to-business markets, which is relevant for the purpose of the study (Madhavaram et al., 2023; Sengupta et al., 2018).

Next, based on title, abstract and full text reading, the articles that represented studies focusing on inter-organizational triads, as conceptualized by Vedel et al. (2016) were manually selected. Thus, studies that dealt with other kinds of triadic concepts (e.g. internal triads or the resource-capabilities- performance triad) were left out. The same is true for studies that only mention a triadic context or approach in passing, but they do not contain a substantial discussion of the phenomenon (Wynstra et al., 2015)

The screening of the articles and the application of the inclusion criteria as described, yields a final sample of 94 articles (5 review articles and 89 research papers). The fourth step of the SLR method involves the analysis and synthesis of the results, to be conducted through an extraction form. The final step calls for the reporting of the results, to which a separate section of this on-going work is dedicated.

Results.

Triads in sustainable supply chain management (SSCM)

Through careful analysis of the keywords and full-reading of the articles, sustainability and SSCM emerge as an under-researched theme within the literature adopting a triadic approach, with only three articles in the retrieved corpus

(Cole & Aitken, 2020; Halldórsson et al., 2019; Sanchez-Rodrigues et al., 2010). This seems surprising because there is increasing awareness on the fact that the majority of the environmental and social impact is not under the direct control of a focal firm (Bové and Swartz, 2016; Carter et al., 2019), instead it lies within the supply chain. Thus, a triadic approach - which allows to grasp a broader and multifaceted perspective on such a complex issue - could benefit from further academic interest (Fritz & Ruel, 2023; Tachizawa & Wong, 2014). Moreover, such an approach would allow answering to researchers' recommendations to extend views on SSCM (Fritz & Ruel, 2023; Gammelgaard, 2023; Nilsson, 2019).

Main themes

Careful analysis of the articles in the corpus and synthesis of their findings (Mishra et al., 2022), together with consideration and selection of each article's keywords describing the focus of the research, guided the formation of thematic clusters (Sengupta et al., 2018). Most of this research focuses on relational factors, with main topics including interactions and relational dynamics, the nature of relationships, the governance and control mechanisms in triadic structures. Moreover, two themes are more related to supply chain-specific issues, these include servitising and services outsourcing, together with innovation emerge as debated areas.

Inter-organizational triadic structures

A broad diversity of triadic structures, involving various actors and tiers of the supply chain is revealed in the literature. Consequently, a categorization of triads as presented in the literature and a brief discussion regarding their characteristics seems an appropriate starting point to investigate whether there are differences in the topics of investigation, contexts or methods depending on the specific triadic structure being investigated. First of all, a distinction between two-tier and multi-tier triads is evidenced (Bastl et al., 2013).

Two-tier manufacturing triads represent one of the most common triadic structures investigated in SCM research as well as one of the first ones to be conceptualized (Choi & Wu, 2009b); it is formed by one buyer and two of its first-tier, upstream suppliers.

Moving to multi-tier structures, triadic configurations were first introduced in studies investigating the outsourcing phenomena (Li & Choi, 2009), distinguishing between manufacturing or service settings. Manufacturing multi-tier triads include both upstream-facing (i.e. back-end) triads - formed by the buyer-supplier link (which takes place across two tiers) and the second-tier supplier (the supplier's supplier) - as well as downstream-facing triads (i.e. front-end, customer-facing). The latter triad includes the buyer-supplier link and the buyer's customer in the investigation. While a linear diagram represents the manufacturing setting, wherein a manufacturing buyer can control the interaction between its suppliers and its customers because the latter is not in direct contact with any of the suppliers; relational dynamics change when it comes to service settings and thus the links are represented with a triangular diagram (Li & Choi, 2009). This allows to account for the direct interaction between the supplier and the buyer's customer, which does not happen in manufacturing contexts. (Li & Choi, 2009). Service triads stand out as the structure that has received the most attention: one-third of the total number of articles retrieved presents the service triad as the focus of investigation. Finally, the logistics triad was defined as "a cooperative, three-way relationship between a buyer of goods, the supplier of those goods, and logistics service provider moving and/or sorting the goods between buyer and supplier" (Larson & Gammelgaard, 2001).

Research limitations. The scope of this on-going research is to systematically review the literature about triadic structures and their relational dynamics. Moreover, the study addresses studies that investigate supply chain management issues adopting an inter-organizational triadic approach. However, despite efforts to adopt a very comprehensive search strategy, it is possible that some relevant studies investigating phenomena from a multi-tier perspective, with three entities as unit of analysis, are missed, due to the use of other keywords to describe the focus of investigation.

Managerial implications. Coherently with previous recommendations to extend views on SSCM (Fritz & Ruel, 2023), the present SLR serves as a starting point to inform supply chain and logistics scholars of the state-of-the-art of triadic approach in the discipline, encouraging further studies that can grasp the complex interactions and dependencies, together with their effects on performance - and specifically sustainable performance, within supply chain triads.

Originality of the paper. In the current business scenario, a company's performance is tied to the relationships and interactions that it has with other actors in the supply chain (may it be suppliers, customers, logistics service providers etc.) (Autry et al., 2014; Ellinger et al., 2020). Therefore, it is pivotal to recognize and address supply chain issues by adopting a broader perspective, that takes into consideration their complexity and multi-level elements (Gammelgaard, 2023; Nilsson, 2019). In order to get insights into supply chain and network phenomena, it has been argued that studies should investigate the association of at least three actors and their relations (in other words, a triad) (Choi & Wu, 2009b; Vedel et al., 2016). Recent literature has recognized the centrality of link-by-link triadic interactions and relationships for the formation of supply chains (Bals & Tate, 2018; Karatzas et al., 2016; Ralston et al., 2023); however, such an approach remains scarce in the investigation of sustainability issues in SCM literature. This may be due to theoretical and methodological complexities (Durach et al., 2021; Nilsson, 2019) as well as due to measurement issues both among researchers and practitioners, with previous studies finding lack of sustainability measures at supply chain or network level (Fritz & Ruel, 2023; Miemczyk et al., 2012).

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Logistics services providers in humanitarian logistics. A bibliometric and systematic literature review

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Abstract

In recent years, the importance of logistics services in disaster relief operations and the capacity of logistics services providers to improve humanitarian logistics have become an increasingly interesting topic for both professionals and academics. Logistics service providers (LSPs) have recently assumed a more prominent role inside the humanitarian logistics field. Since there are very few studies on this specific topic despite its cruciality, then our work contributes to filling the research gaps, with a specific perspective on LSPs. Our first aim is to define how the scientific humanitarian logistics and supply chain management literature has been developed referring to the role of LSPs. And secondly, we aim at understanding what are the main collaborations between LSP and humanitarians inside the humanitarian logistics and supply chain management literature. This study employs a dual approach, initially conducting a bibliometric research, subsequently followed by a systematic review in order to thoroughly analyze the scientific literature on the matter and better understand the significance of the role of LSPs. The results of this research may be of particular interest to academics and practitioners in both the business and humanitarian sectors because the opportunities to involve LSPs in disaster relief operations are reflected in the best outcome for the logistics of humanitarian aid to benefit people in need.

Key words: humanitarian logistics; supply chain management; logistics service providers; disaster relief; emergency services; literature review.

Framing of the research. *The world is contending with multiple crises - such as conflict in Ukraine that has displaced over 6.3 million people; meanwhile, Afghanistan is still contending with the aftermath of a devastating earthquake felt across five provinces, impacting thousands of people; there have also been recent floods in the Dominican Republic and protracted conflicts such as in Sudan (World Economic Forum, 2024). According to the report of the Office for the Coordination of Humanitarian Affairs - OCHA (Fan et al., 2023), COVID-19, climate crisis, conflicts and catastrophes are major factors which drive up humanitarian needs in 2022, leading to the result that 274 million people need humanitarian assistance, which represents the importance of humanitarian logistics (OCHA, 2022).*

The definition of “humanitarian logistics” considers the people, resources, knowledge, and activities involved in planning, implementing, and controlling an efficient and effective flow and storage of materials (with their corresponding information and financial flows), from the points of origin to the place where they are in need when a disaster or an emergency occurs; moreover, it is crucial to efficiently and effectively coordinate inter-organizational performance, eliminate redundancy, and maximize synergy along the entire emergency supply chain relationships, from a “supply chain management” perspective (Cozzolino, 2012; Van Wassenhove, 2006; Thomas, Kopczak, 2005).

It is critical to relief operations and getting aid to where it’s needed quickly, particularly as supply chain bottlenecks and risks can easily transpire. It also comprises most of its core funding needs, with studies placing 73% of humanitarian expenditures as linked to supply chain activities (weforum.org, 2024). Amid increasing conflict and disasters, humanitarian logistics face challenges adapting to evolving humanitarian needs, requiring a careful approach to aid and logistical coordination (Christopher, Tatham, 2011). Humanitarian logistics is collaborative among stakeholders from governments, NGOs, multilateral agencies, and the private sector, especially logistics services providers - LSPs (Cozzolino, 2021; 2012). Owing to the increasing importance of logistics in humanitarian operations, LSPs have recently become more prominent (Fan et al., 2023; Kucukaltan et al., 2022; Cozzolino, 2021).

Purpose of the paper. *Since logistics and supply chain management competences are those most decisive and needed by the humanitarian sector in managing disaster relief, companies dealing with the business of logistics and supply chain management can be considered among the most useful in being able to contribute, because the company’s contributions with the greatest impact on the social sector use “core business skills” (Kanter, 1999; Van Wassenhove, 2006). Companies with their core business in logistics and supply chain management are the so-called “logistics service*

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providers” - LSPs: by virtue of their competences, they can play a crucial role in managing logistics activities and the coordination of relationships along the supply chain, as it is needed in humanitarian disaster relief operations that represent very complex logistics operations (Cozzolino, 2021; 2012).

According to this consideration, our first research question is:

RQ1 - How has the scientific humanitarian logistics and supply chain management literature been developed referring to the role of logistics providers?

In the report of OCHA (OCHA, 2022) has been declared that ‘the private sector has been a key ally during COVID-19. Greater collaboration is needed to systematically include the private sector in humanitarian coordination systems’, which shows the importance of cooperation between relief organizations and private sectors. Business-humanitarian collaboration seeks “to build on synergies between the business and humanitarian communities to advance humanitarian objectives and at the same time support CSR” (Andonova and Carbonnier 2014, p. 350). Companies often provide a mix of “cash donation, in-kind donation of goods or services, the provision of technical or managerial expertise, cause-related marketing, employee giving schemes and sponsoring, or logistical support and collaboration specific to field activities”; in such cases, the humanitarian organization that is involved generally “grants its corporate partner the possibility of using its name or logo in public communication, thus creating a public association of image or brand between the two parties” (Andonova and Carbonnier 2014, p. 350). In particular, similar statements can be found in other academic sources, i.e., Tomasini and Van Wassenhove (2009) determined that relief organizations and private sectors, in particular with LSPs, can benefit from cooperation. Also, evidence shows that suitable cooperation between relief organizations and LSPs is an efficient approach when responding to a disaster or an epidemic.

According to this consideration, our second research question is:

RQ2 - What are the main collaborations between LSP and humanitarians inside the humanitarian logistics and supply chain management literature?

Methodology. This study was conducted via a bibliometric literature review (BLR) and a systematic literature review (SLR) aimed at thoroughly investigating the themes and identifying the primary research areas associated with the domain of humanitarian supply chain and LSPs. The objective was directed towards identifying trends, potentialities, and advancements within the field (Tranfield et al., 2003; Durach et al., 2021). To address the first research questions, it was necessary to firstly select the dataset. On that perspective, the Scopus database was chosen, given its prominent relevance on an international scale for scientific publications. The contributions analyzed were selected with the aim of studying the role played by LSPs in the humanitarian logistics and supply chain management literature. The initial dataset retrieved from Scopus encompassed 177 articles, spanning from 2005 to 2023, the starting point being dictated by the year in which the first paper adhering to the search criteria was published. Subsequent refinement based on publisher type narrowed the dataset down to 151 articles, excluding all papers not published in academic journals. The final phase of selection excluded publications that were thematically distant from the core field of supply chain management and humanitarian logistics. The final dataset was formed by 105 documents, dement congruent with the research objectives. Our dataset has been analyzed using Bibliometrix, a package available on Rstudio. It allows the study of the selected publications by employing graphic maps and tables (Aria & Cuccurullo, 2017; Cucino et al., 2021). Subsequently, we used VOSviewer, a specific software designed for the visualization of bibliometric networks and clusters, to finalize the research (Van Eck and Waltman, 2014). As a second step, a systematic literature review - that allows an evidence-informed approach to identifying, selecting and analyzing secondary data - has been conducted following recognized guidelines to assure rigor in the methodological process (Denyer & Tranfield, 2009; Tranfield et al., 2003). We have considered the literature analyzed by the bibliometric research and other references were added manually as they reported inside the text specific name/s of LSPs and their collaboration within the context of humanitarian logistics. After that we have chosen the ones that explicitly mentioned the collaboration with the Logistics Cluster or the World Food Programme as leader of the LC or the participation in the Logistics Emergency Teams initiative (LETs).

Results. The analysis aimed to explore the trajectory of research on the topic of humanitarian logistics in recent years. A comprehensive sample of 105 documents was analyzed, originating from 75 different sources, and classified as follows: 83 scientific articles, 9 book chapters, 1 book, 1 note, and 2 reviews. Table 1 delineates the primary characteristics of the analyzed documents through the accessible R interface, encompassing the sample description, document contents, author collaborations, and document classifications.

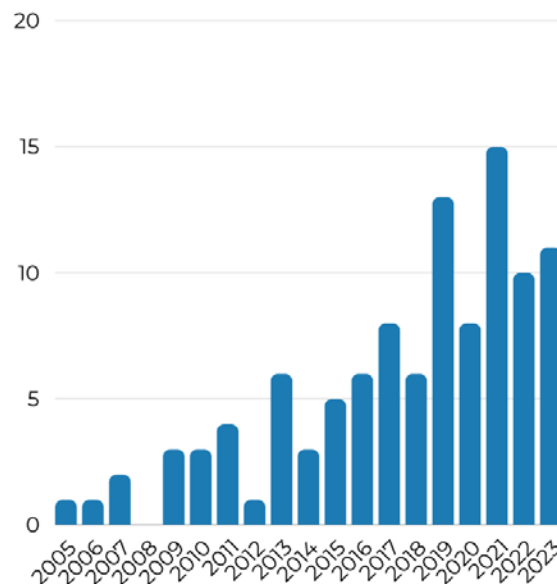
Table 1: Main characteristics of the dataset

Description		Authors of single-authored documents	10
Documents	105	Authors of multi-authored documents	285
Sources (Journals, Books, etc)	73	Authors' collaboration	
Period	2005-2023	Single-authored documents	11
References	5582	Documents per Author	0.356
Average years from publication	5.34	Authors per Document	2.81
Average citations per documents	21.23	Co-Authors per Documents	3.18
Average citations per year per doc	32.869	Collaboration Index	3.03
Document contents		Document types	
Keywords Plus (ID)	520	Article	83
Author's Keywords (DE)	390	Book Chapter	9
AUTHORS		Note	1
Authors	295	Review	1
Author Appearances	334	Book	1

Source: our elaboration

The relevance of the themes under investigation is evident, the number of publications on humanitarian logistics and supply chain management, specifically concerning LSPs, increased in the last two decades. The following Figure 1 shows the annual scientific production. The topics under review have witnessed increasing relevance within the scientific literature and reached their peak in terms of the number of publications in the year 2021.

Figure 1: Annual Scientific Production

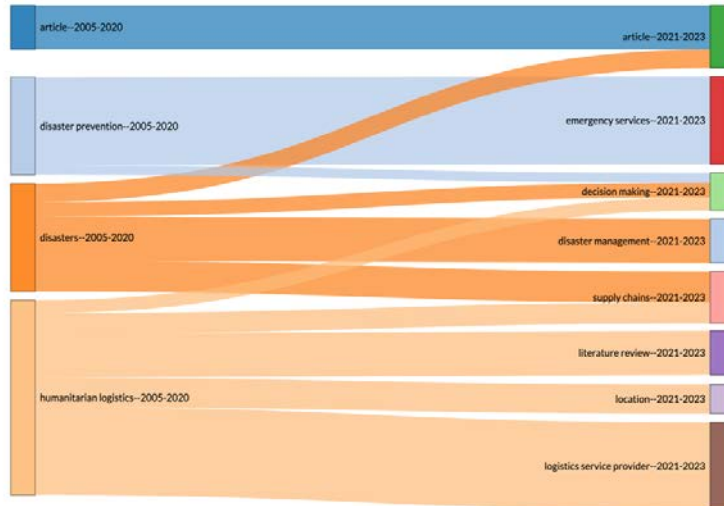


Source: our elaboration

To deeply understand the dimensions explored by articles related to the theme of humanitarian logistics, supply chain management, and the specific role of LSPs, a thematic evolution analysis was conducted. Analyzing the thematic evolution of specific themes and understanding how they changed and evolved over time in the scientific literature is useful to better understand the main dimensions on which scholars have focused most.

The idea behind the representation in Figure 2 is to see how certain thematic areas evolve and change over time. It entails a bifurcation into two phases, offering a depiction of the scenario before and after a specific "cutting" moment. It shows on the left the main thematic areas that have had an important impact on the scientific literature from 2005 to 2020; on the right, it presents the themes pertinent to the years 2021 to 2023. Topics that appear only in the initial time slices and do not continue represent areas that have decreased in focus, possibly due to the resolution of earlier concerns or the shift of the academic community's interest to more pressing issues. This graph can help researchers identify trends over time, emerging themes, and potential areas for future research. The selected cutoff year was 2021, the year following the pandemic and COVID-19 restrictions, precisely because it represents the year of greatest change and adaptation to the new post-pandemic situation. Furthermore, according to Mami Mizutori, Special Representative of the UN Secretary-General for Disaster Risk Reduction, 2020 was also the year "that set new records for the number of people requiring humanitarian aid and support" (UNDRR - Annual Report, 2020). Since 2021, the keyword "logistic service provider" has begun to emerge as a primary keyword within research related to humanitarian logistics, due to the increasingly central role these operators play in the supply chain management field.

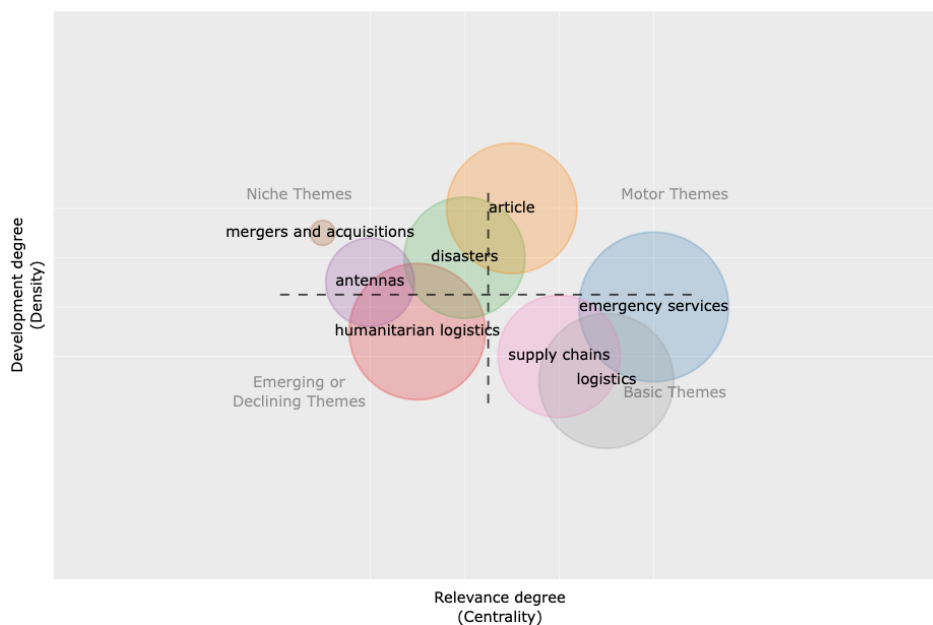
Figure 2: Thematic evolution of the keywords



Source: our elaboration

After studying the thematic evolution of research in recent years, it was essential to proceed with the analysis of the main themes and dimensions being investigated by scholars. The study of the most frequently used keywords is essential for grasping the dimensions explored by the current academic literature. The thematic analysis (Figure 3) provides an additional point for reflection, offering insights into how scholars have approached specific topics over time.

Figure 3: Thematic analysis of the keywords



Source: our elaboration

In Figure 3, the most used keywords in the articles are plotted on a Cartesian plane, represented based on their level of development and relevance. It becomes apparent, particularly in the aftermath of recent natural disasters (e.g., Fukushima, 2011), and after the 2011 annual meeting of the UN Global Logistics Cluster (Stadler and Van Wassenhove, 2012), that the role of LSPs in Humanitarian Logistics has become increasingly central to operations of emergencies' prevention and management.

The keyword "antennas" emerges as particularly interesting due to its dual application and the emerging/niche position it is covering on the map. The first application has a focus on the research strands concerning the delivery of medical supplies through aerial support in humanitarian emergencies (Ghelichi et al., 2021). The second application focuses specifically on the RFID technology, which enables companies to monitor their supply chain workflow, yielding more actionable data regarding manufacturing equipment, inventory, asset management, and company processes, thereby enhancing the effectiveness and performance of supply chain management (Zare Mehrjerdi, 2010).

Subsequently, in order to answer precisely to RQ2 a systematic literature review was conducted. Table 2 shows the collaborations of LSPs with WFP/LC that are reported and described in the articles reviewed.

Table 2 - LSPs' collaborations with WFP/LC from the academic literature. Source:
 Our update from Cozzolino et al., 2017.

Reference	Agility	Moller -Maersk	TNT	DP WORLD	UPS
<i>Tomasini and Van Wassenhove (2004)</i>			✓		
<i>Samii and Van Wassenhove (2004)</i>			✓		
<i>Van Wassenhove (2006)</i>			✓		
<i>Thomas and Fritz (2006)</i>			✓		
<i>Spring (2006)</i>			✓		
<i>Binder and Witte (2007)</i>			✓		
<i>Tomasini and Van Wassenhove (2009a)</i>			✓		
<i>Tomasini and Van Wassenhove (2009b)</i>			✓		
<i>Maon et al. (2009)</i>			✓		
<i>Quinn (2010)</i>			✓		
<i>Stadler and Van Wassenhove (2012)</i>	✓	✓	✓		✓
<i>Oglesby and Burke (2012)</i>	✓	✓	✓		✓
<i>Cozzolino et al. (2012)</i>	✓	✓	✓		✓
<i>Vega e Roussat (2015)</i>	✓	✓	✓		✓
<i>Abidi et al. (2015)</i>	✓	✓	✓		✓
<i>Bealt et al. (2016)</i>			✓		
<i>Nurmala et al. (2017)</i>			✓		
<i>Cozzolino et al. (2017)</i>	✓	✓	✓		✓
<i>Nurmala et al. (2018)</i>			✓		
<i>Cozzolino et al (2018)</i>	✓	✓			✓
<i>Sigala e Walkolbinger (2019)</i>			✓		
<i>Medel et al. (2020)</i>			✓		

Reference	Agility	Moller -Maersk	TNT	DP WORLD	UPS
Cozzolino (2021)	✓	✓		✓	✓
Pascucci (2021)	✓	✓		✓	✓

Source: our elaboration

Long-term partnerships have been identified, particularly the “Moving the World” initiative of TNT, a third-party logistics company and World Food Programme (WFP) (Tomasini and Van Wassenhove, 2009). In particular, the LSPs belonged to Logistics Emergency Teams (LETs) (with different compositions along the time, and now composed by Agility, A.P. Moller Maersk, DP World and UPS) and collaborating with the United Nations Logistics Cluster/World Food Programme (WFP) represent an example of best practices and a unique partnership between profit and non-profit sectors in CSR (Stadler and Van Wassenhove, 2012; Cozzolino et al., 2017; Cozzolino, 2012; 2021). This is the first (historically) and still the only international experience of multi-company integrative partnership that has focused on logistics services and been composed of companies in the logistics sector with humanitarians that work in emergency responsiveness: LETs in collaboration with the WFP, as a Global Logistics Cluster for the entire system of the United Nations and other organizations that belong to the international humanitarian community (www.logcluster.org). We have chosen to focus on collaboration with WFP because after the reform of the 2005 - the Humanitarian Response Review (HRR), established in August 2005 that created the Cluster Approach - the WFP became the leader of the Logistics Cluster for the United Nations and most of the humanitarian organizations.

Research limitations. This paper is not free from limitations. The main limitation is that the paper is still a work-in-progress; this implies that the findings and interpretations presented are preliminary and subject to refinement with further research we are working on. Other limitations are also insights that merit acknowledgment and consideration for future research directions. Firstly, the reliance on the Scopus database, while beneficial for its comprehensive coverage and international relevance, may inadvertently exclude relevant studies published in journals or databases not indexed in it. Secondly, the methodological focus on bibliometric and systematic literature review, while rigorous, inherently limits the scope of inquiry to published academic articles, excluding gray literature, internal reports from humanitarian organizations, and firsthand accounts from logistics service providers. Thirdly, as the field of humanitarian logistics and the role of logistic service providers continue to evolve, ongoing analysis and updates to the literature review will be crucial for maintaining relevance and accuracy. Future studies could aim to incorporate broader data sources, include more recent developments, and explore underrepresented themes to build upon the foundational insights provided in this analysis. Lastly, this study needs to be deepened, in its empirical investigation, with an on-field analysis, which requires a further detailed examination that extends the understanding of collaborations opportunities and criticalities between humanitarians and logistics services providers. This could be achieved by questionnaires for and semi-structured interviews with the professionals engaged in the disaster relief operations.

Managerial implications. For practitioners, both in the commercial and in the humanitarian sector, this paper provides manifold managerial insights. The study considers how to make it possible to concretely help people in need by reaching them through the various humanitarian relief operations where humanitarians and logistics service providers collaborate. Moreover, it can be a good basis for a constructive dialogue to build new projects to achieve further goals in the humanitarian context. Furthermore, the COVID-19 pandemic has aggravated the context of the global crisis, and the need for coordination arises as an even more burning topic. As declared in the “Financial Times” (22 April 2020), the pandemic crisis has underlined the need to work together for the vital safety of single actors and entire supply chains: transforming their supply chains to “just in case” models (FT, 2020). The collaborations investigated in this research sustain the supply chains in this direction, through concrete and effective coordination, and it may be of example for other realities, in humanitarian contexts as well as in commercial ones.

Originality of the paper. Since the 2004 tsunami, companies and aid organizations have been evaluating the ways in which they could collaborate together most fruitfully in a humanitarian context. The involvement of private sector companies, especially logistics services providers, has grown considerably in relief operations inside the humanitarian action in recent years, and a “burning” imperative has emerged in academic and professional contexts: logistics in humanitarian action makes the difference between successful or failed results in the humanitarian operation, and it represents the costliest part of any disaster relief, accounting for about 70/80% of the total costs in each disaster operation. This imperative leads to the consciousness of the need for a more in depth understanding of the effective private sector-humanitarian logistics engagement meeting the challenge of preparing for/responding to disasters. Since there are very few studies on this specific topic despite its cruciality, our work contributes to filling the research gap, with a specific perspective on LSPs.

This study pioneers a comprehensive bibliometric analysis of scientific publications in the domain of humanitarian logistics and supply chain management, focusing specifically on the evolving role of LSPs. Through this approach, we have illuminated the trajectory of scholarly discourse and pinpointed pivotal themes within the field. Notably, our study reveals the increasing centrality of LSPs in facilitating effective and efficient humanitarian responses. Secondly, this

investigation extends beyond traditional narrative reviews by integrating bibliometric mapping and systematic literature review techniques. This dual approach allows to capture the multidimensional landscape of LSPs contributions to humanitarian logistics, offering a nuanced understanding of their roles, challenges, and opportunities for enhancement. Furthermore, the study breaks new ground by delving into the specific collaborations between LSPs and humanitarian organizations, a relatively underexplored area in the literature.

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Eco-packaging innovations in paper and cardboard. Preliminary insights from cognitive mapping on international projects

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Abstract

The presence of packaging along the supply chains is pervasive, both as product itself and as product-packaging combination. Due to its pervasiveness along supply chains, packaging carries great importance in achieving sustainable goals and targets, over the entire packaging life cycle - from production, through to distribution and transport, to use and disposal. In particular, the environmentally sustainable impact of packaging has been in the last years an increasingly important issue for businesses. The European Commission places packaging among the “key product value chains” for circularity. Despite its cruciality, the academic literature presents gaps in the study of eco-packaging innovations undertaken by firms to concretely improve environmental sustainability. Then our work contributes to filling the research gaps, with a wide perspective investigating which are the environmentally sustainable practices that firms adopt in innovating packaging - in particular in paper and cardboard materials - and what are the implications of these practices on packaging logistics aspects. To accomplish the objectives of this study, a qualitative content analysis was conducted using cognitive mapping on multiple cases of eco-packaging innovations at international level.

Key words: packaging; innovation; environmental sustainability; logistics; circular supply chain; cognitive map

Framing of the research. *The presence of packaging along the supply chains is pervasive, both as product itself and as product-packaging combination (Silva and Pålsson, 2022; Cozzolino, 2021). Due to its pervasiveness along supply chains, packaging carries great importance in achieving sustainable goals and targets (Fitzpatrick et al., 2012), over the entire packaging life cycle - from production, through to distribution and transport, to use and disposal (Kozik, 2020). It is precisely the packaging “logistics” processes that make product packaging possible, flowing through the entire supply chain and defining interaction with the physical environment and the socio-economic context (Cozzolino, 2021; Vernuccio et al., 2010). Thus, the idea of “sustainable” packaging logistics has been growing in academia and professional contexts (Cozzolino, 2022; Cozzolino, 2021): many authors have emphasised the close relationship between the concepts of packaging and logistics processes - both forward and reverse - along the supply chain (García-Arca et al., 2014; Azzi et al., 2012; García-Arca and Prado-Prado, 2008; Hellström and Saghiri, 2007; Verghese and Lewis, 2007; Saghiri, 2002; Lockamy, 1995; Twede, 1992).*

In particular, the environmentally sustainable impact of packaging has been in the last years an increasingly important issue for businesses (Verghese and Lewis, 2007; Hellstrom and Nilsson, 2011; Nguyen et al., 2020; Cozzolino and De Giovanni, 2023). It clearly emerges that packaging influences, at least, product development and design, purchasing, production, and distribution (Min and Galle, 2001; Ahmad et al., 2018; Meherishi et al., 2019). In fact, the debate on the impact of packaging on the natural environment has more recently shifted towards a more holistic discussion of the impact of the packaging life cycle throughout the supply chain (Sarkis, 2003). According to a review by Silva and Pålsson (2022), research on packaging incorporates Circular Economy concepts: from this perspective, designing, making, using, collecting and treating packaging requires the implementation of a proper system to recover value from waste and the collaboration with other organizations and stakeholders, either within the same industrial sector or in different ones (De Giovanni and Zaccour, 2014; Weetman, 2017; De Giovanni and Zaccour, 2019; Farooque et al., 2019; Zhang et al., 2021; De Giovanni and Folgiero, 2023).

In the document “Circular economy action plan. For a cleaner and more competitive Europe” by the European Commission, packaging is placed among the “key product value chains”, “where the potential for circularity is high”, together with others: “electronics and Information and Communication Technologies”, “batteries and vehicles”, “plastics”, “textiles”, “construction and buildings”, and “food, water and nutrients”³. Accordingly, the sustainability challenges posed by packaging value chains require urgent, comprehensive, and coordinated actions, contributing to the

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³ https://ec.europa.eu/environment/pdf/circular-economy/new_circular_economy_action_plan.pdf

response to climate emergencies, and focusing on reducing (over)packaging and packaging waste, driving design for reuse and recyclability of packaging, and considering reducing the complexity of packaging materials.

Focusing on packaging materials, it is possible to see how many different types of materials can be used for packaging, such as paper, plastic, steel, aluminum, wood, and glass, and various combinations among them. In particular, the recent study by Cozzolino and De Giovanni (2023) on circularity of packaging reveals that the specific type of packaging material (especially with a focus on paper and plastic) can change firms' preferences regarding sustainable practices they want to adopt, so that going in deep with a focus on a single material may be of great interest for academia and practitioners to relay understand concrete implementations.

Purpose of the paper. The aim of this work is to understand which are the main environmentally sustainable practices in innovating paper and cardboard packaging. In particular, our attention is on those eco-packaging innovations that are concretely realized and implemented by firms. So that the paper aims at investigating firstly the following research question:

RQ1 - Which environmentally sustainable practices do firms adopt in innovating paper and cardboard packaging?

Our attention is also on the importance of the logistical implication linked to the eco-packaging innovations. So that the paper aims at investigating secondly the following research question:

RQ2 - What are the implications of these practices on packaging logistics aspects?

Among different packaging materials, paper and cardboard ones receive significant attention for many reasons, at least: as it is the most used packaging material worldwide, accounting for approximately 33 percent of packaging material consumption (Statista, 2022⁴); as, it is made by a natural, biodegradable, and bioavailable cellulose polymer, increasing popularity in the field of packaging, especially food packaging (Liu et al., 2021); as, paper and paperboard packaging is found wherever goods are produced, distributed, marketed, used (Kirwan, 2012), and even in return processes (Lai et al., 2022); as, its recyclability is achieving very high percentage in line with the European directive targets, as the EU27 recycling rate of paper and cardboard packaging waste, based on the latest data available, is 82%, and Italy, in particular, reaches 85.1%, exceeding the target set for 2030 (Ansa, 2023)⁵; and, as it can be a valid substitute of plastic packaging very often (Silva and Molina-Besch, 2023); last but not least, as it has become a global issue with the recent virgin paper shortage problems at international level (Forbes, 2022)⁶.

Moreover, to the best of our knowledge, previous studies mainly focused on single or few case studies which consider very specific aspects of packaging innovations towards sustainability (Albrecht et al., 2013; Koskela et al., 2014; Dominic et al., 2015; Saraiva et al., 2016; Geueke et al., 2018; Abejón et al., 2020; Ferrara and De Feo, 2020; Lo-Iacono-Ferreira et al., 2021; Accorsi et al., 2022; Sasaki et al., 2022; Silva & Molina-Besch, 2023), with the exception of the work by Cozzolino and De Giovanni (2023), that studies portfolios of sustainable practices for packaging in the circular economy with a wider empirical investigation from many firms perspective, as we develop in this research.

Furthermore, the aspect linked to packaging logistics is of great interest, considering not only the implications of the innovations on transport and handling activities (such as improvement of warehousing and display operations, optimization of loads on pallets and means of transport, etc.), but also the implications in terms of the "packaging system", for each level (primary, secondary, tertiary) and in terms of interactions between the different packaging levels, as defined by Twede (1992).

Methodology. To accomplish the objectives of this study, we have first of all reviewed the international academic literature that focus on sustainable practices implemented for the circularity of packaging in paper and cardboard, to better document the existing studies and properly highlight the research gaps that we aimed to fill. After that, a qualitative content analysis was conducted using cognitive mapping to elicit the main practices adopted in eco-packaging innovations in paper and cardboard. We used data available through the "National consortium for the recovery and recycling of cellulose-based packaging" (Comieco) in Italy. It is part of the Conai system (the "National consortium of packaging"), that is a private system, which operates on a non-profit basis, to which over one million companies that produce and use packaging (in steel, aluminum, paper, wood, plastic, bioplastic, and glass) adhere at Italian level.

Comieco manages the system of collection and recycling packaging of cellulose origin in Italy, bringing together paper mills, producers, transformers, importers and recyclers of paper and cardboard for packaging. It also engages in prevention activities, through the support of studies on sustainable packaging. Among the prevention initiatives, Comieco "Best Pack" database project collects the most deserving cases of eco-packaging in paper and cardboard which best represent sustainable solutions on the market, and which have obtained recognition at national and international level, thanks to interventions on the product or on the process, from design to consumption and disposal: this approach can be summed up by Comieco in the concept of "prevention" so that these cases are defined as "the champions of prevention".

We have collected each awarded case and we have built up a database considering the following information: firm's name and the one of the specific case, a short text description of the innovative initiative, including the type of circular action, the type of intervention, the type of structure; other information we have collected are about the use destination, such as for industry or for the final customer, and the product category, if for food or not. The type of "circular" action investigated are reduce, reuse and/or recycle. The "reduction" practice mapped by Comieco refers to these category options: savings on raw materials/lighting, reduction of energy consumption/greenhouse gas emissions, and reduction

⁴ <https://www.statista.com/markets/410/topic/961/pulp-paper/#statistic2>

⁵ https://www.ansa.it/ansa2030/notizie/asvis/2022/12/30/litalia-ricicla-il-72-dei-rifiuti-e-avanza-sulla-raccolta-differenziata_fcdd06dc-edec-40c1-ad54-7e0cf2976344.html

⁶ <https://www.forbes.com/advisor/personal-finance/current-shortages-usa-prescription-drugs/>

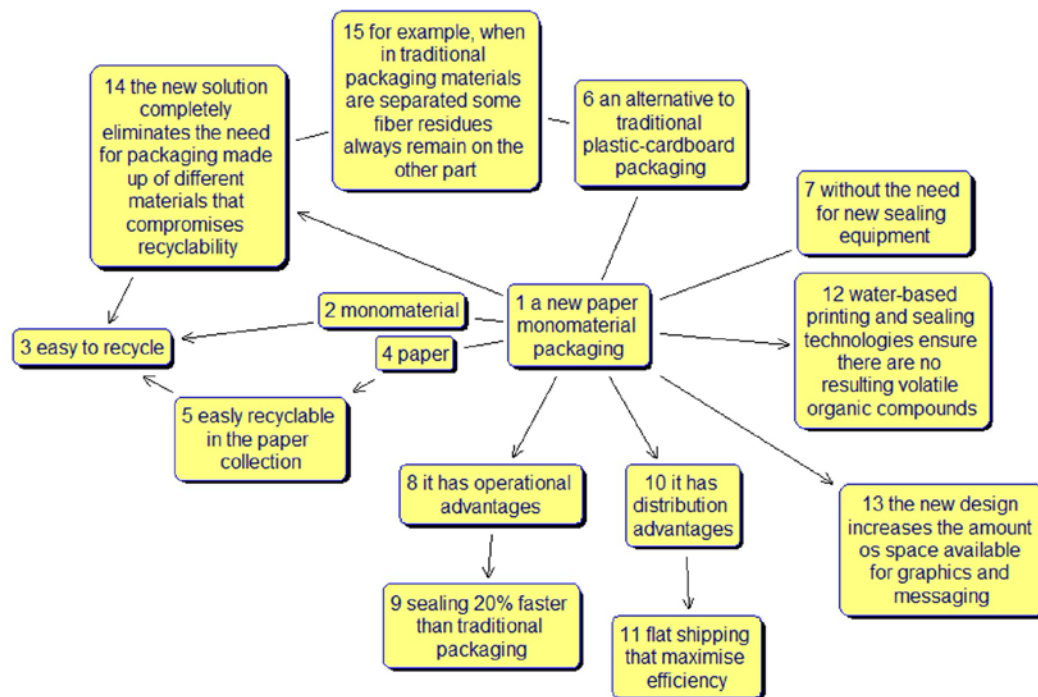
of product waste and production waste; the “reuse” practice considers the same use or also other intended use of the packaging; referring to the “recycle” practice, the options mapped are facilitation of recycling activities, use of recycled materials, and use of biodegradable materials/compostable.

Results. From the total numbers of cases of 725 innovative eco-packaging cases of cellulose origin, 284 cases present logistics optimizations effects after the innovations, and among them we started to select the 11 most recent cases, that have been analysed more in deep, using cognitive maps method. We have drawn 11 different cognitive maps, one for each case. Cognitive maps are “significant mental representation of reality” as it is perceived and described by a given subject (Weick and Browning, 1986). The design of the cognitive maps was performed with the assistance of Decision Explorer© software (Ackermann, Eden & Cropper, 1992).

Different type of intervention has been carried out on packaging to achieve the sustainable objectives and it can take place through update/redesign of a packaging, design of a new packaging or a new component, and optimization of production processes (e.g. process simplification, reduction of process waste, reduction of production time).

The analysis of the cognitive maps allows us to highlight the eco-packaging innovations implemented, if and how the interventions that have been realized on them are connected to each other (causally or not), and/or to other concepts. Also, it is possible to underline what are the most frequent innovative interventions. Moreover, the logistical implications emerge as concrete advantages from the innovation. Some innovative interventions are highlighted that have an impact not only on environmental sustainability, but also there are areas of integration among marketing, logistics, operations, and ethics in packaging innovation: in the figure, for example, concept n. 13 for marketing (“the new design increases the amount of space available for graphics and messaging”), n. 8 and 9 for operations (“it has operational advantages”, “sealing 20% faster than traditional packaging”, etc.). Some results present tradeoffs among practices, as well as the operational and logistical challenges that firms face whenever they seek to integrate environmentally sustainable practices into their operations as underlined by Pålsson and Sandberg (2020; 2022). Furthermore, some practices may require coordination with external parties, making management even more difficult. These preliminary considerations can represent food for thought for future lines of research.

Figure 1 - Cognitive map of a case of eco-packaging innovation. Source: Our elaboration with Decision Explorer© software.



Research limitations. This paper is not free from limitations. The main limitation is that the paper is still at a work-in-progress step of development; but we are already working to improve the research. Firstly, the maps have to be created and analyzed from all the cases inside the database of innovative projects, to have a complete overview of what has done by the involved companies. Secondly, it needs to be deepened, especially in its empirical investigation, with an on-field analysis, which requires a further detailed examination that extends the understanding of packaging innovations towards sustainability, considering both opportunities and criticalities in implementing them; this could be achieved by questionnaires for and semi-structured interviews with the professionals actively engaged in packaging design and utilization.

Other limitations are also insights for future research. For example, future research can replicate our study by either using a sample not belonging to Comieco, investigating a different population of firms and projects, or focusing on specific sectors. Furthermore, we rely on environmental innovations, but it worth analyzing also social innovations in

packaging. Moreover, future research could integrate the field of packaging sustainability with digital technologies. Finally, future research could incorporate the evaluation of packaging innovations on performance measurement through Life Cycle Assessment - LCA methods (starting for example at least from indicators such as reduction in CO₂ emissions, energy usage and water consumption). The authors are currently studying along this direction.

Managerial implications. This research can support managers and policymakers who are interested in eco-packaging innovations in an economically viable manner, focusing on reduction in both (over)packaging and packaging waste and driving designs for packaging reuse and recyclability. Our study aims to offer a roadmap for decision-makers, managers and policymakers who are involved at various levels in their organization and are interested in understanding interventions, results and consequences of implementing sustainable practices to improve circularity of packaging, its products and their value along the supply chain. Moreover, since the packaging design phase, from the generation of the product idea to its production, is becoming more crucial - as recent research reports cited in Forbes (2022⁷) that underline how eco-packaging emerges as a key trend in the market - our research goes in the direction to a concrete understanding of opportunities and criticalities in the implementation of eco-design initiatives (Ahmad et al., 2022). Ahmad et al. (2018) report that the design phase is responsible for about 80% of the sustainability impacts of products.

Originality of the paper. This research enriches existing literature by examining practices for eco-packaging innovations that are combined together to improve environmental performances along the supply chain; and, concrete managerial implications arise, as eco-design innovations for packaging emerges as a key trend in the market. Since there are very few studies on this specific topic despite its cruciality, then our work contributes to fill the gap of the academic literature underlined by the previous work by Cozzolino and De Giovanni (2023). Also, it introduces the cognitive mapping method for the analysis of the topic. Along these original elements we expect concrete results and implications in the direction of understanding how firms transform their packaging to overcome the manifest sustainable challenges they face in these turbulent times. The real cases analyzed represent innovative “best practices” inside their sectors and provide preliminary concrete evidence that could inspire research and practice along this way. Then this study is a starting point for future steps on this topic, at both the theoretical and empirical levels.

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⁷ <https://forbes.it/2022/10/13/packaging-riciclabile-numeri-trend-mercato-forte-crescita/>

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Strategic reshoring: redefining competitiveness in global markets

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Abstract

Global transformations, from pandemics to geopolitical concerns, are reshaping strategic management, driving a reshoring trend in the Italian fashion industry. This study explores the impact of global shocks on strategic approaches, motivations for reshoring, and implications for competitiveness and sustainability. Findings reveal a shift toward relocating production processes led by rising costs and supply chain concerns. Despite the benefits, reshoring poses complexities such as upfront costs and regulatory challenges. Integrating reshoring with business ecosystems fosters collaboration and innovation, improving resilience and competitiveness. Being focused on the fashion industry in Italy, the study recognizes the limits of generalizability and emphasizes the dynamic nature of reshoring trends. The originality of the study lies in its focus on the fashion industry and the integration of reshoring strategies with local ecosystems, offering theoretical and practical insights for strategic management.

Keywords: country of origin; fashion industry; reshoring; Italy.

Framing of the research. *In recent years, the global arena has experienced unprecedented transformations, characterized by a series of upheavals ranging from pandemics to ecological crises, from geopolitical tensions to changing political dynamics (Napier et al., 2024). This rapid pace of change has been remarkable; starting with the emergence of the COVID-19 pandemic, followed by subsequent global environmental disasters and conflicts, there have been significant transitions in the geopolitical landscape (Brands and Gavin, 2020). These events have left nations and regions debilitated, disrupting the once-stable foundations of societies around the world and dissipating the sense of soundness of economies previously considered secure and robust. Consequently, countries are facing new vulnerabilities that require a reassessment of strategic approaches at both macro and micro levels (Cui et al., 2023). Evolving geopolitical landscape and the rise of new power structures on the global stage present long-term strategic considerations that require attention. In this intricate context, the capacity to anticipate and respond effectively to evolving challenges and opportunities is imperative to the resilience of organizations (Sudan et al., 2023). As a result, businesses face a myriad of pressures. On one side, they must deal with the repercussions of crises such as pandemics and environmental disasters (Salunkhe et al., 2023). On the other, they face increasing challenges to react, innovate, and gain competitive advantage in an uncertain environment (Vecchiato, 2015; Teece and Leih, 2016). In response to this transition, in which the extraordinary has become routine, businesses are urged to develop new visions, business models, and strategies different from those arising from the classic globalization model. Rather than adhering to backward methods that emphasize efficiency and scale, companies are encouraged to focus on restructuring value chains and cultivating new business ecosystems to mitigate a wider range of potential shocks and thrive in this rapidly changing environment. Indeed, the traditional model of internationalization, which relies on interlinked global supply chains and widespread outsourcing, is increasingly under examination in light of recent global disruptions (Gölgeci et al., 2023). Over the past two decades, international markets have drastically changed their conditions regarding the appeal of countries seeking internationalization. In a highly turbulent global environment, country risk extends beyond specific territorial contexts to encompass at least half of industrialized countries. Multinational corporations have engaged in reorganization efforts aimed at shortening and addressing emerging supply threats, starting with local supply chains, a phenomenon further exacerbated by well-documented pandemic events (Etamad, 2020). The COVID-19 pandemic has exposed the vulnerabilities embedded in complex and globally integrated supply chains, such as spreading outages and breakdowns in transportation networks, that have caused production to stall in many sectors (Deloitte, 2020; Rinaldi and Bottani, 2023). In a similar vein, environmental issues and geopolitical tensions revealed the risks associated with excessive dependence on distant suppliers and volatile regions (Newman and Visoka, 2023). Instead of focusing exclusively on reducing costs and optimizing efficiency, organizations should prioritize flexibility and adaptability to effectively juggle an environment characterized by insecurity and instability. This requires a fundamental shift in mindset, with companies*

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recognizing the urgency to embrace change and innovation as ways to secure long-term competitive advantage (Afraz et al., 2021). At the core of this ongoing transformation is the recognition of the importance of reconfiguring value chains to align them more closely with current reality. Instead of depending on sprawling, failure-prone global supply networks, businesses are constantly exploring the benefits of shorter, highly localized supply chains, which provide stronger control and greater resilience (Thilmany et al., 2021). By relocating production close to their home countries and decreasing dependence on distant suppliers, companies can alleviate the risks associated with global disruptions while reducing their ecological impacts (Polyviou et al., 2023). The creation of extensive global value chains and the process of internationalization are realities recognized by business scholars and practitioners alike. However, a new trend that is substantially reshaping international development processes is second-degree offshoring (Barbieri et al., 2019; 2022). In parallel, there is a growing recognition of the need to nurture new entrepreneurial ecosystems able to foster innovation and expansion in an uncertain environment. This requires the creation of interconnected networks that include companies, startups, and other stakeholders that can cooperate and pool resources to pursue common objectives (Jocovski et al., 2020). By cultivating a climate of innovation and collaboration, companies can discover and exploit new sources of knowledge and creativity, fostering a spirit of adaptation and enabling them to thrive in an increasingly competitive environment.

Purpose of the paper. Over the past thirty years, companies have undergone significant transformations in how they manage production processes, facing escalating challenges in maintaining vertical integration, where a company controls its suppliers and/or customers (Harrigan, 1984; Anderson and Weitz, 1986). The topics of country of origin and production decisions gained prominence in the 1980s amidst the globalization of production. It became commonplace for companies to relocate production stages and manufacturing processes abroad, driven primarily by cost-saving motives and the search for unique production resources (Jensen and Pedersen, 2011). Nowadays, pressures on companies to execute various production processes have intensified, encompassing diverse aspects, including logistics and communication. Recent years have witnessed a notable trend towards re-localization of production or even a significant shift towards deglobalization among internationalizing companies. Based on these premises, the study aims to address the following research questions:

RQ1: What effects have recent global shocks had on the strategic management approaches of companies across different industries and geographical areas?

RQ2: What are the primary factors motivating and hindering businesses in adopting reshoring strategies?

RQ3: What are the key determinants driving companies to relocate production processes or optimize value chain relationships closer to their home country, and how do these decisions affect the overall competitiveness of the ecosystem, including supply chain resilience, operational efficiency and performance?

In order to answer the three research questions, the study begins by analyzing the reshoring processes implemented by numerous companies in different industries. Our objective is to understand and discuss the strategic and operational implications of reshoring practices to provide valuable insights for both theory and practice. Economic research posits that the process of deglobalization involves three primary economic flows: the dynamics of imports and exports of goods and services at a global or regional level, expatriates' remittance of money and inflows/outflows resulting from foreign direct and portfolio investments (Postelnicu et al., 2015). These considerations of international management aim to identify both the phenomenon of firms returning to the country of origin ("back-shoring" or "reshoring") and relocating to third countries (referred to as "nearshoring" when approaching the country of origin). Moreover, the motivations behind relocation choices can have an impact not only on the location of individual firms, but also on the whole supply chain. At the same time, internationalization should be conceived as a reversible phenomenon. Therefore, if market expectations are not satisfied, it is advisable to reconsider internationalization (embracing the phenomenon of back-shoring) or explore alternative locations (thus promoting further relocation or near-shoring). However, there are other motivations to internationalize, such as the "made-in" effect. This involves leveraging the reputation of the home country to increase brand loyalty and influence customer and market perceptions of product quality. Another driving force is technological progress, which allows firms to replace manual labor with technology and reorganize previously labor-intensive activities both domestically and in other advanced markets within the home region.

Methodology. This study focuses on Italy, which serves as an intriguing case study within the realm of strategic management, particularly due to its distinctive characteristics, notably in the realm of small and medium-sized enterprises (SMEs) (Cassia and Colombelli, 2010; Zucchella and Hagen, 2015). Within this domain, there exists a diverse spectrum of companies, ranging from those with purely domestic operations to internationally oriented firms, engaging in varying degrees of global to glocal (global-local) activities. The Italian SME landscape exhibits several unique features, such as short value chains and a strong emphasis on sustainability, which not only influence its economic dynamics but also reflect broader challenges encountered by companies in the global arena (Martins et al., 2022). SMEs hold a prominent position within Italy's economic system, making significant contributions to employment, innovation, and economic growth. This research addresses the phenomenon of reshoring in the fashion industry. The "Made in Italy" clothing industry is significant, as it embodies a combination of style and quality craftsmanship. Italy has long been associated with the ready-to-wear model, which differs from Chinese fast fashion in its selection of high-quality materials and suppliers. Several Italian regions, home to renowned "Made in Italy" companies, were examined from south to north, analyzing the key factors influencing various production processes from a reshoring perspective. Reshoring has gained prominence in recent years, driven by factors such as rising labor costs in offshore locations, concerns about supply chain resilience, and a growing emphasis on proximity to markets (Chen et al., 2022). In the context of the Italian

manufacturing sector, particularly in the fashion industry, reshoring strategies have received significant attention. For example, in the Lombardia fashion system (one of the regions studied), the average distance between suppliers in the Made in Italy sector has dropped from 155 km to 100-80 km. Examining the experiences of businesses operating in the "Made in Italy" fashion industry, using Orbis and Confindustria as a reference dataset, this study aims to clarify the complexities of reshoring initiatives and their impact on production and sales processes. Through a comprehensive analysis, the study seeks to identify the specific stages of the value chain most affected by reshoring efforts, illuminating the challenges and opportunities associated with this strategic shift. It also delves into the advantages and disadvantages of reshoring strategies, offering a nuanced understanding of their implications for competitiveness and sustainability. Besides examining reshoring strategies, this study also explores the emergence of entrepreneurial ecosystems at the local level, recognizing their importance in promoting business resilience and driving innovation. Entrepreneurial ecosystems incorporate a network of interconnected organizations, institutions and stakeholders that collaborate within a specific geographic region or industry sector, playing a crucial role in fostering entrepreneurship, facilitating knowledge exchange and stimulating economic growth. The methodology adopted in this study is designed to establish a robust framework for examining the intricate dynamics of reshoring strategies and entrepreneurial ecosystems in the context of the Italian fashion industry. It integrates quantitative analysis with qualitative insights, offering a comprehensive understanding of the phenomena under investigation (Harrison et al., 2020). The survey instrument facilitated the collection of data on the prevalence and characteristics of reshoring initiatives among Italian fashion companies, capturing essential variables such as the motivations for reshoring, the specific stages of the value chain involved, and the perceived benefits and disadvantages of this strategic approach. Through a preliminary testing phase, any potential concerns or limitations of the survey were identified, and necessary refinements were made to ensure its validity and reliability (Aithal and Aithal, 2020). After the pilot test, the research moved on to conducting interviews with decision makers (entrepreneurs and/or top managers) in the Italian fashion industry. These interviews are designed to gain qualitative insights into the drivers, barriers, and strategies related to reshoring initiatives and entrepreneurial ecosystems. By directly engaging key stakeholders, the study aims to capture perspectives and experiences that quantitative analysis alone might overlook. Data collected from questionnaires and interviews are analyzed using a mix of quantitative and qualitative methodologies. Quantitative data are subjected to statistical examination to identify patterns, trends, and correlations, while qualitative data are analyzed to reveal underlying themes and narratives.

Results. The expected outcomes of this study include a deeper understanding of the characteristics of reshoring strategies among Italian fashion firms, along with an exploration of the factors and challenges that impact their adoption. In addition, the research aims to shed light on the emergence of entrepreneurial ecosystems within the Italian context, elucidating their effects on business resilience and innovation. This effort not only improves operational efficiency and adaptability, but also fosters resilience against external shocks and disruptions. By reducing dependence on distant suppliers and streamlining production processes, Italian companies are able to deal with the uncertainties and risks inherent in today's fast-changing economic scenario. Preliminary analysis indicates that the Italian fashion industry shows a strong commitment to sustainability, reflecting a growing awareness of the environmental and social impact of business operations. Interviews reveal meaningful strides toward sustainability, as Italian companies increasingly embrace eco-friendly production methods, fair labor practices, and ethical sourcing in all their operations. By examining the interplay between reshoring strategies and business ecosystems, the study uncovers potential synergies and opportunities for collaboration that can improve the competitiveness and sustainability of Italian firms. Preliminary findings suggest that reshoring initiatives allow companies to regain control of their supply chains, thereby reducing the risks associated with offshore production and improving responsiveness to customer demands. In addition, entrepreneurs express optimism about relocating production closer to home, mentioning benefits such as reduced transportation costs, improved quality control and greater protection of intellectual property. However, reshoring initiatives bring significant benefits, as well as complexities. The decision-making process related to business process offshoring involves significant upfront costs, including investment in infrastructure, technology, workforce training and identification of new trusted suppliers. In addition, reshoring can result in higher labor costs than offshore destinations, potentially erasing the cost advantages that initially drove outsourcing decisions. In addition, reshoring initiatives can disrupt established supply chain relationships and require companies to navigate regulatory complexities and market dynamics in their home countries. These issues and trade-offs are currently being explored in depth.

Research limitations. While this work offers valuable insights into strategic management practices, it is critical to recognize some limitations that delineate the scope of the research and highlight opportunities for future investigation and improvement. First, a significant limitation concerns the focus of the research. By analyzing the experiences of Italian firms regarding reshoring strategies and entrepreneurial ecosystems within the fashion industry, the study may not fully understand the diversity and intricacy of strategic management practices across different sectors and regions. Indeed, the dynamics of reshoring can vary significantly depending on factors such as industry characteristics, geographic location, and market conditions. Therefore, while the results of this research offer valuable insights in the context of the Italian fashion industry, their applicability to other sectors or regions requires further validation and exploration. The second limitation concerns the dynamic nature of the topic under investigation. Reshoring strategies and entrepreneurial ecosystems are subject to continuous evolution and change, influenced by factors such as technological advances, regulatory changes and sudden shifts in consumer preferences. Consequently, the results of this research can summarize the current state of the art, capturing a temporary glimpse of broader trends and dynamics. Longitudinal studies tracking

the progression of reshoring strategies and entrepreneurial ecosystems over time, as well as comparisons across sectors and countries, could provide valuable guidance.

Managerial implications. Outlining the strategies and approaches adopted by Italian companies, this study offers a roadmap for improving resilience, fostering innovation, and promoting sustainable growth through optimizing supply chain strategies and using local ecosystems to achieve collaborative benefits. For practitioners, the preliminary findings of this research offer practical insights to navigate the complexities of a rapidly changing business landscape. The study reveals that different models of strategic development can be profitable for companies, depending on their unique resources and capabilities in their specific contexts. In particular, the analysis provides guidance and recommendations for evaluating potential reshoring activities and considering the resources and capabilities needed to implement such strategies. This includes not only the skills and capabilities intrinsic to the firm, but also relational aspects in interactions with the whole supply chain, transforming it into a full-fledged ecosystem.

Originality of the paper. This work stands out for its originality in the context of research on strategic management and business resilience in response to unprecedented global transformations. Through an innovative approach, the work explores the phenomenon of reshoring and entrepreneurial ecosystems, focusing on the fashion industry in Italy, a choice that reflects the relevance and uniqueness of this context on the international scene. In a world marked by destabilizing events such as the COVID-19 pandemic, environmental disasters and geopolitical tensions, the paper aims to analyze the effects of these shocks on the strategic management strategies of Italian firms and the dynamics of their entrepreneurial ecosystems. Through a comprehensive methodology that integrates quantitative and qualitative analysis, the study provides a comprehensive view of the reshoring strategies adopted by Italian firms, highlighting the motivating and inhibiting factors as well as the implications of these strategies for competitiveness and sustainability. This work offers a unique and in-depth perspective on a topic of increasing relevance in the context of current economic and geopolitical scenario, providing valuable insights for the theory and practice of strategic business management.

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Unpacking the “truce” in Sales and Operations Planning routine. An ethnographic study (work in progress research)

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Abstract

In the evolving landscape of modern organizations, the last few decades have witnessed a paradigm shift towards virtuosity, marked by significant improvements in operational efficiency and performance. Key drivers of this transformation include integrating communication channels along the supply chain and implementing lean principles in production processes, coupled with the widespread adoption of digital technologies. These advancements have facilitated streamlined operations and enabled organizations to achieve unprecedented levels of financial growth.

The Sales and Operations Planning (SOP) process is central to the success of virtuous organizations, which serves as a linchpin for aligning internal resources with external customer demand. SOP entails a series of regular monthly meetings involving representatives from various functions, including Marketing & Sales, Operations, Supply Chain, and Finance. However, despite its instrumental role in fostering inter-functional alignment, SOP is often fraught with conflicts. This inherent conflict arises from divergent functional objectives, as each function seeks to optimize its performance, sometimes at the expense of others.

While existing literature acknowledges the significance of SOP in organizational performance, there remains a gap in understanding the mechanisms that lead to conflict avoidance or resolution within this process. This paper seeks to address this gap by adopting a routine-based perspective, conceptualizing SOP as an ongoing and dynamic inter-functional routine. Drawing on theoretical frameworks such as Nelson and Winter's theory of organizational routines and Dionysiou and Tsoukas's model of routine (re)creation, we aim to unpack the role of organizational routines in mitigating conflicts during SOP sessions.

Specifically, we hypothesize that increased enactment of role-taking within SOP routines leads to decreased conflicts among organizational actors. To empirically investigate this hypothesis, we propose an ethnographic study within a large manufacturing firm, wherein we will closely observe the dynamics of SOP meetings and analyze the role-taking behaviors of participants. By structuring our paper to elucidate the significance of SOP, proposing a routine-based conceptualization, detailing our methodology, and outlining our expected contributions, we aim to provide actionable insights for practitioners and scholars in organizational behavior and management.

Key words: SOP, routine, routine as a truce

Framing of the research and purpose of the paper. *In the last decades, most virtuous organizations experienced a general improvement, from integrating and streamlining the communication along the supply chain (Grimson and Pyke, 2007) to implementing lean principles in the production process, creating production flow, and reducing waste (Furlan et al., 2011; Dal Pont et al. 2008). Another facilitating factor in reaching a superior performance is the use of digital technologies and the wide adoption of integrated internet technologies from both the supply side (i.e., Industrial Internet of Things) and the demand side (i.e., marketing responsiveness and massive data gathering possible due to internet-related technologies). The result of those virtuous cycles is an improvement in the firm's ability to generate financial growth. Parallel to the benefits of technology implementations, managerial tools, and processes play an important role in continuously aligning the firm's internal resources with external customer demand. Among those processes, Sales and Operations Planning (SOP) plays a crucial role. This process consists of a series of regular monthly-held meetings in which the representatives of each function (i.e. Marketing & Sales, Operations and Supply chain, Finance) advocates its own interests (Grimson and Pyke, 2007) and through confrontation, the actors aim at finding an agreed upon aggregate production plan over the medium-term (3-18 months).*

Due to its role in inter-functional planning alignment, SOP is an inherently conflictual process (Jacobs and Chase, 2023). In planning capacity and production, each function aims to maximize its own performance, even at the expense of

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other functions (Rotemberg and Salor, 1995; Jacobs and Chase, 2023). In most virtuous organizations, SOP consists of a clear and routinized process of monthly meetings with a clear format (Lapide, 2005).

Even if several papers have studied the benefits and inner workings of SOP, there is a lack of understanding about the mechanisms that lead to conflict avoidance or resolution during the process. In this paper, we aim to unpack these mechanisms, relying on the theory of organizational routines and interpreting SOP as an ongoing and dynamic inter-functional routine. As theorized by Nelson and Winter (1982: p.109), “[routines] largely prevent or deter individual members from pursuing their own interests along lines that are so strongly antithetical to organizational requirements as to threaten the feasibility of any coordinated performance at all.” In other words, organizational routines serve as truces among organizational actors that temporarily aligned their respective interests. To unpack how these “truces” emerge, we draw on Dionysiou and Tsoukas’s (2013) model of (re)creation of routines, exploring role-taking as a conflict-solving mechanism. We assume that the more role-taking is enacted, the less conflicts will emerge. However, we lack clarity about how role-taking takes place in actual routines. To this end, we study the enactment of SOP within a large manufacturing firm adopting an ethnographic approach.

SOP: an overview

SOP is defined as “The process that companies use to keep demand and supply in balance by coordinating manufacturing, distribution, marketing, and financial plans” (Jacobs and Chase, 2023; p.244). The coordination in planning among functions has been proven to impact different organizations’ dimensions positively. In fact, extant literature testified the effectiveness of a well-implemented SOP over different firms’ goals, such as alignment between demand and supply (Chae, 2009; Singh, 2010), alignment between various functions (Ivert and Jonsson, 2010; Paiva, 2010), and alignment between supply chain (Gianesi, 1998; Lapide, 2005). Additionally, SOP helps to improve forecasts (Bower, 2005), operational performance (Milliken, 2008), and management of uncertainty and risks (Lapide, 2009).

However, despite the proven effectiveness of this process, only a few organizations have developed sufficient maturity in SOP. Several models have been developed to measure the maturity of SOP implementation. These models are usually conceptualized as composed of three to five steps (Wing and Perry, 2001; Lapide, 2005; Feng et al., 2008; Cacere et al., 2009). Despite the differences in the number of maturity stages, all those conceptualizations share some common traits. For example, in early maturity stages, SOP meetings are held occasionally, with a loose structure and without a proper information system, and each function makes the forecasts independently to pursue each own financial goals (Lapide, 2005; Grimson and Pyke, 2007). Moreover, shifting from one maturity stage to another usually means creating a proper structure for these meetings, following a precise and described agenda, and establishing a dedicated information system that each function can update (Lapide, 2004; 2005). As firms reach more mature stages of SOP implementation, monthly meetings are anticipated by the so-called “pre-SOP meetings,” in which each function prepares its forecast, presents it in the official meeting, and all the material is shared between functions to ensure homogeneity in information availability. All the benefits mentioned before increase as companies reach more mature stages of the SOP model (Grimson and Pyke, 2007). In fact, with a proper meeting structure and information systems, it is easier to coordinate, align, and solve inter-functional inconsistencies in the planning phase, extending the coordination to other players along the supply chain (Lapide, 2005). Ideal stages of SOP maturity are very difficult to achieve (Lapide, 2005) but serve the organizations as archetypes to aspire to.

SOP as an organizational routine: truce and conflicts

Routines have been recognized as how organizations accomplish much of what they do (Feldman and Pentland, 2003; Becker, 2004). One reason for creating a routine is to create a workable level of certainty and improve process effectiveness (Weick, 1979). With their evolutionary perspective, Nelson and Winter (1982) define routines as stable and predictable action patterns and organizational genes that can be inherited and selected by the organization’s environment. Interestingly, they identify a role of “truce” to routines, meaning that they can solve intra-organizational conflicts, both manifest and latent, as long as they “stay within predictable bounds that are consistent with the ongoing routine” and “the terms [of the truce] become increasingly defined by a shared tradition arising out of the specific contingencies confronted and the responses of the parties to those contingencies. In the interpretive context of such a tradition, actions by individual members have connotations related to the terms of the truce.” (Nelson and Winter, 1982: p.110-111). Diverging from the traditional perspective that compares routines to genes characterized by highly inertial structures, with evolution relying on experiential, localized, and semiautomatic search processes (Cyert and March 1963, Nelson and Winter 1982), a body of research indicates that the tangible transformation of routines encompasses both experiential and deliberate characteristics (Gavetti and Levinthal 2000, 2004). According to this recent view, Feldman and Pentland (2003, p. 96) define routines: as “a repetitive, recognizable pattern of interdependent actions involving multiple actors.” We rely on the view of SOP as predictable patterns of collective actions to grasp and evaluate the interactions between SOP participants, unveiling the underlying mechanisms leading to conflict avoidance.

In particular, we propose a routine-based view in which SOP can be reduced to a series of recognizable patterns of actions that guide individuals’ behaviors toward a mutual understanding over the foreseeable future, mediating between each function’s own strict interest. We argue that this shared understanding among individuals is the real source of the SOP’s positive impacts on organizational performance. As mentioned before, our conceptualization of the routine-based view of SOP starts from the model of (re)creation of routine (Dionysiou and Tsoukas, 2013).

In the initial phases of routine creation, the team must establish shared mental models and meanings of what the team should accomplish (Dionysiou and Tsoukas, 2013). Initially, a team starts operating in an environment characterized by few rules and artifacts; by interacting multiple times to achieve the predetermined goal, employees can create a pattern

of actions to accomplish it. The more the routine is repeated, the more its outcome becomes certain as the pattern of actions and the scope to achieve is clearer to the employees (Dionysiou and Tsoukas, 2013). After the routine creation, it has to be sustained, and it is not possible to do it without the support of the team's norms, climate, and artifacts (Dionysiou and Tsoukas, 2013; Pentland and Feldman, 2005). We hypothesize that creating shared schemata between coworkers and the few standard operating procedures provided by the upper management makes it possible to establish a routine that can guide employees' emotions and cognition through a shared habit (Cohen, 2007). Through repetition, schemata about each component's role in the routine and the expected results will be shared. To achieve such results, at the early routine-forming stage, people perform some role-taking activities that evaluate the role of others in the process, assess the possible interdependencies, and assess their overall contribution to the routine. We stress the "role-taking" mechanism as crucial in routine formation and conflict resolution. As noted by Dionysiou and Tsoukas (2013, p. 186), "It is through taking the role of others that individual lines of action are fit together to form joint action. Each individual aligns his or her action to the action of others by identifying the social activity in which they are about to engage and by ascertaining what those others are doing (or what they intend to do) in forming the joint action." In the context of SOP, the role-taking leads to breaking the tunnel vision barrier, embedding it in the functional planning, and addressing the need for other functions, which should lead to compromises in planning future activities.

Similarly to Dionysiou and Tsoukas' model (2013), in the early stage of SOP implementation, there is no clarity on the scope of the process in participants' minds. We expect a clear routine will emerge with several interactions between function representatives as long as the participants engage in role-taking behaviors. This latter mechanism should appear as each function representative embeds other representatives' points of view in each function's forecasting and planning. By doing so, the conflicts should be reduced, and, in the event they still emerge in the meetings, it should guide participants' behavior and intentions toward finding a common solution.

A typical example of inter-functional conflict is represented by marketing and operation in planning for a promotion campaign: on the one hand, the market function decides to push a line of products to the market by designing a discount price that represents a disruption in the normal production schedule of operation. On the other hand, operations function may be considered impossible to satisfy the forecasted demand due to the need for increased production, which is not easily reachable without increasing functional costs. In this context, we argue that an established routine and shared schemata can lead to the creation of some boundary conditions in which the two functions can freely operate, avoiding conflict. For example, as testified by Zbaracki and Berger's (2011) case, through a long process of confrontation and role-taking, sales and marketing finally agreed to make 3-10% adjustments to the final price.

However, both the SOP literature and the more general literature on routine dynamics lack a thorough and detailed understanding of the mechanisms by which the actors enact role-taking, truces emerge, and conflict is solved starting from divergent goals and objectives. This is the paper's aim, and coherently with its explorative nature, to answer the research question, we delve into the SOP process of a firm adopting an ethnographic approach.

Methodology. Pentland et al. (2010) and Mahringer and Pentland (2021) stated that the most appropriate way to study organizational routines is to focus on the observational layer, meaning the performative aspect, even if the scope is to examine the generative mechanism. Coherently with Pentland et al. (2010), we decide to focus on observable actions and verify if there is a "pattern in variety" (Cohen, 2007). In other words, we want to seek a pattern of repeated actions over time to find agreement between function representatives during SOP meetings. Zbaracki and Berger (2011, p.956) noted that "describing the routine as a truce misses the conflict behind the truce; it reveals only the stable truce." Moreover, articulating the terms of a truce invariably lacks full explicitness, with particular emphasis on the intra-organizational truce, wherein explicit delineations are frequently absent. (Nelson and Winter, 1982). To overcome this issue, we build our empirical study following the methodology of Zbaracki and Berger (2011), adopting an ethnographic approach to unveil the mechanisms leading to a truce. Therefore, to shed light on routine dynamics as a truce, we focus on the interplay between actors rather than treating the routine as an entity.

As a research setting, we studied the SOP meetings of a large manufacturing firm. We seek to gather data engaging in at least six months of longitudinal study, which has three main sources:

Ethnographic Interviews. We will conduct ethnographic interviews (Spradley, 1979) with representatives of each firm's function to fully understand the context in which the SOP meeting took place and the dynamics in the company.

Nonparticipant Observation. During the SOP meetings, we will conduct nonparticipant observation, following the planning process as it focuses on observing the interaction between members of different functions and the dynamics that will occur when a problem arises. Moreover, we will evaluate the evolution of the SOP implementation, evaluating the grade of maturity and the changes that will occur through its repetition over time.

Records Data. Finally, we will record data: this source will be needed to have a clear picture of the SOP's implementation as-is state. We need to know the degree of integration of the information systems as well as the consistency in participation of each function's member. If any, we will also collect any document attesting to any conflicts that arose in the past, and, along with interviews with key informants, we will assess the process followed to solve it.

As far as data analysis is concerned, by comparing the situation of each SOP meeting and the action path it follows, we will be able to evaluate the performative aspect of this routine. In addition, by comparing our findings to records data, we can assess whether a more routinized SOP behaves like a truce routine. Moreover, by participating in the meeting, we will also be able to evaluate which form of truce mechanisms emerge.

Managerial implications. *With this empirical research, we aim to elucidate the success factors of SOP by exploring its routine nature. To do so, we adopt an ethnographic approach to assess the process manifestations that lead to conflict-avoidance and resolutions. Moreover, by studying the manifestation of the truce mechanism of routines, we want to shed light on the role of organizational routines in organizational processes. In addition, we aim to answer Zbaracki and Berger's (2011) and Pentland and Feldman's (2005) on the role of operations routines in stabilizing and changing organizations' behavior and to unveil the dynamics of "routine as a truce." These findings have strong managerial implications since a more complete understanding of the success factors of SOP as routine, along with a clearer depiction of how it manifests its mechanisms, can help management effectively implement SOP and completely enjoy its benefits.*

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Which governance strategy is best for specialized investments? Insights from the weaker partner's perspective

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Abstract

This study revisits the governance strategies for protecting relationship-specific investments in scenarios of power asymmetry, building upon Subramani and Venkatraman's 2003 work. We not only replicate their analysis but also expand it by examining three governance mechanisms, up from two, and incorporating an additional dimension for temporal asset specificity, which enriches the framework with a focus on intangible time-related investments. Our contributions are twofold: we empirically demonstrate the link between asset specificity and governance mechanisms in modern business contexts where intangibles and time constraints heighten the risk of opportunism. Furthermore, we emphasize the importance of replication studies in supply chain management, responding to the recent scholarly call for more research in this area.

Key words: *governance; specialized investments; replication; TCE; opportunim*

Framing of the research. *The issue of protecting investments that are specific to buyer-supplier relationships, known as relationship-specific (or specialized) investments, has been a fundamental aspect of Transaction Cost Economics (TCE) since the theory was first introduced in 1937 (Coase, 1937). Asset specificity is characterized by investments tailored to support a particular transaction, which cannot be repurposed for "alternative uses or by alternative users without a loss of productive value" (Williamson, 1991, p. 81). Companies often undertake these specialized investments to enhance productivity and generate profits (Dyer, 1996). However, pursuing increased specialization comes with its costs and risks. For instance, in the electric power sector, strategic decisions to situate some power generation plants near specific mines ensure a steady coal supply but also create site-specific scenarios. In these scenarios, the assets are fixed and expensive to move (Parker, Tan, and Kazan, 2019). While such specialized investments can lead to higher productivity, their value diminishes if the original transaction ends prematurely (Williamson, 1985; De Vita et al., 2011). In such cases, the investor faces the risk of being left with sunk investments, underperforming or excess assets, and an inability to redirect resources to other, more promising ventures (Buvik and Reve, 2001). Thus, when asset specificity is a factor, the transaction costs within a relationship escalate, and the potential for opportunistic behavior increases as well (Dyer, 1996).*

*Many theorists, beginning with those in the field of Transaction Cost Economics (TCE), have long maintained that selecting an appropriate governance structure is crucial for protecting specialized investments and mitigating opportunism (Stump and Heide, 1996; Geyskens et al, 2006). Nevertheless, the imbalance of power between partners affects how each contributes to governance strategies, leading to varied outcomes (Brito and Miguel, 2017). Within this area of study, the work by Subramani and Venkatraman, published in 2003 in the *Academy of Management Journal*, stands out for its significant influence. This prominence is attributed not only to the prestige of the journal and its impact on Supply Chain Management (SCM) research, which is not fully reflected by citation metrics, but also because to the fact that it tackles an issue that remains critically important two decades later. Specifically, it explores how vulnerable suppliers, who typically lack the bargaining power to secure safeguards for their relationship-specific investments upfront (ex-ante), develop governance mechanisms to protect their specialized investments after the fact (ex-post).*

The article by Subramani and Venkatraman, published in 2003, is distinguished not only by its significant findings but also by its methodological rigor, including the clarity in the selection of variables, data collection, and analysis. This detail underscores the study's suitability as a basis for a replication study examining the impact of various asset specificities on relationship governance.

In recent years, the importance of specialized investments in buyer-supplier relationships has surged across numerous industries. This increase is due to dedicated investments, particularly intangible ones, facilitating enhanced efficiency (Hameri and Paatela, 2005), fostering relationship development (Skarmeas and Robson, 2008), and spurring technological progress (Zheng et al., 2022). At the 2023 International Federation of Purchasing and Supply Management World Summit, a key topic of discussion among professionals was the growing necessity for asset specificity to ensure the continuity of strategic and scarce supplies. Over the last decade, there has been a rising demand for specialized routines (adhering to strict delivery protocols), business process redesign (such as customer-specific engineering for unique

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component production), and knowledge customization tailored to early involvement practices (Johnsen, 2009; Kähkönen et al., 2015), highlighting the evolving landscape of supply chain management and its increasing complexities.

Purpose of the paper. Recent articles in leading journals have rejuvenated the discussion on the significance of asset specificity in both relationship governance (Blome et al., 2013) and relationship performance (Delbufalo, 2021), thereby indicating that the research field remains vibrant and unexhausted. We decided to contribute to this literature with a replication study. Our contribution is twofold.

Firstly, we aim to demonstrate, through empirical evidence, the connection between asset specificity and governance mechanisms in contemporary business environments. In these settings, intangibles and time constraints are crucial in defining the characteristics of relationships, while power imbalances complicate efforts to mitigate opportunistic behavior.

Secondly, we highlight the importance of replication in the supply chain management literature. We respond to the calls for more replication studies made in various prominent journals and editorials (Gattiker et al., 2021; Pagell, 2021), which argue that replication studies are essential but underrepresented in current research. These studies are crucial because they “provide predictive validity and help to ascertain the generalizability of our theories” (p. 89). Herein, we outline our reasons for replicating the study by Subramani and Venkatraman (2003), detailing our approach. We also discuss the methodological challenges we faced and the anticipated outcomes of our research.

We propose a replication study (Gattiker et al., 2021; Pagell, 2021) that yield two models: Model A and Model B. In Model A, we aim to replicate the original framework devised by Subramani and Venkatraman (2003), employing the same variables, constructs, and operationalizations but testing the hypotheses in a new context to provide either confirmatory or disconfirmatory evidence. This approach will also help us identify new boundary conditions. We plan to use a cross-industry setting to compare our findings with the original study, thereby enhancing their generalizability. Instead of focusing on the retail distribution channels context explored by Subramani and Venkatraman, our analysis shifts to upstream supply chain relationships. Our goal is to understand how smaller suppliers, after making their specialized investments, develop governance mechanisms in their dealings with dominant manufacturers.

In Model B, we introduce an expanded version of the original study that adopts a more thorough approach. This expansion covers three governance mechanisms instead of two and adds an extra dimension of asset specificity, bringing the total to five dimensions rather than four. The broadening of governance mechanisms is designed to expand the range of governance options by considering three distinct constructs (Keller et al., 2021): i) Formal relational governance; ii. Informal relational governance; iii. Informal contractual governance. Furthermore, we expand the range of independent variables to enhance our understanding of the asset specificity construct. We introduce the dimension of temporal specificity, a crucial addition that enables us to consider the intangible investments made to manage time-specific requirements. This dimension highlights the critical role of timing in buyer-supplier relationships and the need for mechanisms to manage the risks associated with investments that have a significant time-bound value. Temporal specificity has become indispensable for companies aiming to navigate the challenges posed by recent disruptions. These events have highlighted the importance of managing time-related uncertainties, as delays and unpredictability in supply chains can severely impact operations and profitability (Holgado and Niess, 2023). Figure 1 summarizes the replication study design and its outcomes.

Methodology. We prepared 59 measurement items which map onto eight constructs provided in Figure 1. We plan to use the “lavaan” package in R programming language (Rosseel, 2012) to build Model A and Model B. The model building follows the standard structural equation modelling approach: Measurement Model, if confirmed, followed by the Structural Model. The measurement model tests whether the items measure the constructs they intend to measure. If the measurement model is confirmed, we continue with the structural model to test the hypothesized relationships. The checks we will perform on the measurement model are as follows.

We will provide a descriptive summary of measurement scales which will include: Factor Loadings; Composite Reliability; Cronbach’s alpha; Average Variance Extracted (AVE). We will consider composite reliability and Cronbach’s alpha to ensure internal reliability of the model. Composite reliability uses the outer loadings of the indicator variables and Cronbach’s alpha is a more conservative measure (Hair et al., 2017a, b). We will check that both measures indicate good internal reliability with values for all the multi-item constructs exceeding 0.7 (Hair et al., 2017a, b; Hulland, 1999). The AVE values need to exceed 0.5 to ensure convergent validity (Hair et al., 2017a,b).

We will check for discriminant validity using the AVE and the Hetero-Trait Mono-Trait (HTMT) ratio. The square-root of the AVE of a construct must be greater than the correlation of that construct with other constructs (Fornell and Larcker, 1981). The HTMT ratios must be lower than 0.90 (Henseler et al., 2015). To check for Common Method Bias, we will follow Harman’s single factor method, where we will include all measurement items in an exploratory factor analysis to check that the first factor accounts for less than 50% of the variance in the unrotated solution (Podsakoff et al., 2003). In the structural model, we will focus on the coefficient of determination (R^2) to measure the model’s predictive power. We will report the effect size (f^2) and predictive relevance (Stone-Geisser’s Q^2 , Geisser, 1975) along with structural model path coefficients and their significance. We will present in a summary table which hypotheses are supported and which are rejected. Our aim is to increase confidence in the validity of the original findings of Subramani and Venkatraman (2003) in Model A and also contribute to knowledge by Model B, which extends the original Model A. We will be able to identify the deviations from expectation (e.g, if we cannot confirm Model A) by checking the differences in the operationalization of the measurement items, population including industry and geographical location of the respondents, and control variables (Gattiker et al., 2022).

Results (expected). Based on a systematic test of competing models, we expect to find that the three dependent variables are indeed different from one another, and their determinants are different as well. It is our aim to state that the three governance dimensions effectively safeguard the relationship-specific investments made by suppliers even if with different intensity. Regarding model A, any deviations from the results of the original study can be explained by considering one or more of the following factors: 1) the different context of analysis (supplier-manufacturer dyadic relationships); 2) the different sampling (multiple networks versus single network); 3) different factors related to the two sectors considered (food and fashion industry). In the original study, a counterintuitive result emerged: site specificity was inversely related to the level of joint decision-making. Subramani and Venkatraman (2003) argue that site specificity ensures by itself continuity in the relationships and no other safeguard are needed. We aim to see if this result is confirmed for formal relational governance (including the former joint decision-making variable) and for the other two dependent variables. Regarding model B, we aim to verify whether some dedicated investments are more influential than others in determining governance choices. In the original study, intellectual capital-specific investments (i.e., domain knowledge specificity) were more decisive than other dimensions of asset specificity in relation to governance choices. Moreover, we expect to see if temporal specificity impacts governance mechanisms and whether this impact is uniform across the three considered dimensions.

Research limitations. The study is still in the experimental phase, and we are proceeding to collect the necessary data to proceed with the replication study (both Model A and B). Therefore, one of the major limitations is related to the fact that it does not yet present empirical test results. Another limitation of the study is related to its nature as a replication study. Indeed, as suggested by Gattiker et al. (2021) and Pagell (2021), working on this type of research implies bearing a higher risk of failure than any other empirical work. Researchers have little incentive to replicate the results of previous studies because reviewers, editors, and readers are biased to the new and the novel (Duvendack et al., 2017). Worse, this novelty bias also provides incentives to engage in questionable research practices (e.g., Bishop, 2019). Finally, on those occasions when replication is done, the results of previous research often are not validated, perhaps because of those questionable practices. Despite those motivations, we strongly believe in the value of such replication exercises for increasing the quality of SCM research. We hope our study contributes to making replication explicitly considered as part of the continual testing and refining of theories, which is central to conducting normal science.

Managerial implications. This analysis holds significant value both theoretically and for managers. From a theoretical standpoint, it offers an opportunity to refine and extend a seminal study by examining its applicability in the context of modern, complex exchanges. By exploring the nuanced impacts of asset specificity, particularly intangible and time-related dimensions, it contributes to a deeper understanding of how governance mechanisms evolve in response to these challenges. For managers, the insights gained are equally critical. Understanding the interplay between asset specificity and governance mechanisms can guide the development of more effective strategies for managing relationships and investments. Specifically, it can help managers identify which types of investments require more tailored governance structures to mitigate risks and enhance value creation. Additionally, by recognizing the importance of intangible assets, managers can better allocate resources towards the protection and leverage of these assets, ensuring their firm's competitive advantage in a rapidly changing business environment.

Originality of the paper. Our objective is to explore how various dimensions of asset specificity influence specific governance dimensions, and to identify which relationships are most intense compared to others. We aim not only to compare our findings with those of the Subramani and Venkatraman's (2003) study but also to update the discussion on the relationships between dependent and independent variables. Our primary interest lies in determining whether intangible specific investments exert a stronger influence on certain types of governance (e.g., joint decision-making or relational norms) as opposed to tangible investments (such as physical and site specificity). Additionally, we seek to understand which dedicated investments necessitate more extensive and diversified safeguards. Through this analysis, we aim to reassess the validity of Transaction Cost Economics in the context of modern exchanges, which are characterized by a fragmentation of governance mechanisms and a shift towards the intangible (and time-related) dimensions in relation to asset specificity.

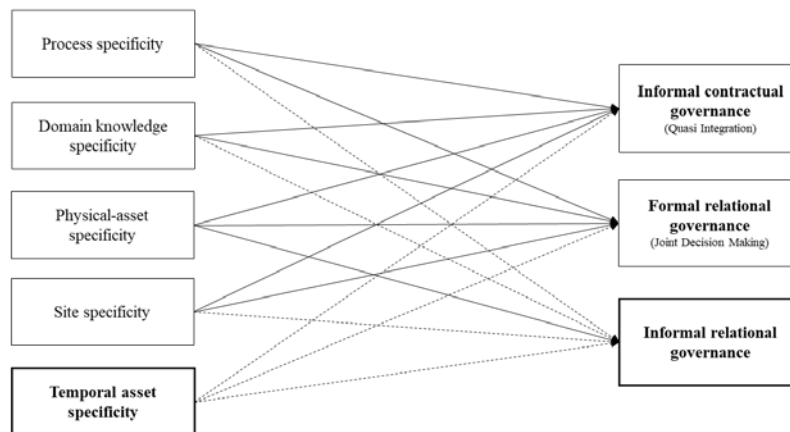
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Figure 1: Theoretical framework for Model A and B*



* Model B: The new variables are identified by bold text, and the new linkages are indicated by a dashed arrow.

Original study: Subramani & Venkatraman (2003)

Decarbonizing Last-Mile Delivery: a study on crowdsourced delivery incentives

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Abstract

The increasing trend of online purchases has imposed considerable tension on delivery services, particularly in the realm of last-mile delivery. This trend has contributed to a notable increase in the number of delivery vehicles, resulting in enhanced CO2 emissions and intricate traffic logistics in urban areas. Consequently, the imperative for the effective integration of sustainable green delivery systems, such as crowdsourced delivery, is on the rise. This research delves into the interplay between economic compensation, non-economic benefits, and the inclination to engage in crowdsourced delivery. Employing an online survey involving 137 participants, the results reveal that both economic compensation and non-economic benefits correlates with an increased willingness to participate in crowdsourced delivery. Intriguingly, the moderating factors of extra travel time and exploration stage challenges do not significantly impact this relationship. This research contributes valuable insights to strategic management, urging delivery firms and their managers to adopt and promote the implementation of environmentally friendly delivery systems.

Key words: Last-mile delivery, crowdsourced delivery, decarbonization

Framing of the research. *The growth of e-commerce has revolutionized the way we shop, transforming the retail landscape and significantly impacting the last-mile delivery sector. The World Economic Forum's (WEF) estimation of 19 million metric tonnes of CO2 emissions from delivery vehicles in major cities in 2019 underscores the environmental fee of this evolving trend. By 2030, 36% more delivery vehicles are anticipated to be on the road (Hartlief & De Leth, 2021), this projection intensifies concerns about the sustainability of current last-mile delivery practices.*

In today's digital age, the seamless process of ordering a package with a few clicks on a computer has become commonplace. With 51% of retailers already offering same-day delivery and 65% intending to adopt this service within the next two years (Saleh, 2018), the demand for efficient last-mile delivery solutions is more pressing than ever. However, the convenience of doorstep delivery comes at a significant cost, both economically and environmentally. Last-mile delivery, a critical component of business-to-consumer e-commerce, poses challenges for retailers striving to balance speed and quality in product delivery (Devari et al., 2017). The common choice offered to customers between store pickup and home delivery reveals the ongoing struggle to find cost-effective and sustainable solutions. Despite the majority of online shoppers preferring home delivery, the costs associated with last-mile delivery range from 13% to 75% of total supply chain expenses, a substantial financial burden for retailers (Gevaers et al., 2009). Compounding these challenges are issues such as the "not-at-home syndrome" and the "ping-pong" effect, where customers' unavailability or failure to meet agreed-upon delivery times results in added financial and environmental costs due to additional miles driven, especially in areas with low consumer density (Devari et al., 2017).

In response to these challenges, retailers are exploring diverse delivery methods, from traditional carriers like DHL to innovative concepts like drone deliveries and in-store pickups with drive-through windows (Slabinac, 2015). However, one of the most intriguing solutions that has emerged in recent times is crowd logistics, offering a potential remedy to last-mile delivery issues in urban areas (Castillo et al., 2022). With the daily surge in deliveries and a growing emphasis on sustainability, academics and industry managers are recognizing the need to explore crowdsourced last-mile delivery as a viable and eco-friendly option.

Purpose of the paper. *In the contemporary academic landscape, scholars have extensively delved into the realm of crowdsourced logistics, crafting frameworks, designing models, and scrutinizing the efficiency of these logistical systems. However, a notable research gap exists, presenting an intriguing avenue for further exploration in this study. Specifically, this research aims to investigate the impact of various payment and incentive schemes on individuals engaged in crowdsourced delivery, as highlighted by prior work (Arslan et al., 2019). The intricate examination of the proposal to provide store credits or rewards to those contributing to delivery assistance, as suggested by Devari et al. (2017), demands thorough investigation. This research posits that a deeper comprehension of the motivations and behaviors of*

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crowdsourced drivers, as advocated by Castillo et al. (2018), has the potential to facilitate the development of intricate and potentially more effective supply management strategies. More in detail, this study aims to fill a critical research gap by exploring the motivations of individuals participating in crowdsourced delivery and identifying the incentives that resonate with them. Acknowledging the pivotal roles played by economic compensation and non-economic benefits in driving participation, the research also probes into the impact of factors such as additional travel time and challenges encountered during the exploration stage. Through the application of a quantitative analysis of primary data gathered through surveys, the study aspires not only to enhance the theoretical understanding of sustainable last-mile delivery systems but also to provide practical insights for the formulation of effective supply management strategies. This paper, in particular, aims to address the following research questions:

RQ: Do economic compensation & non-economic benefits lead to more people joining the crowdsourced delivery system? Do extra travel time and exploration stage challenges have an influence on this?

Participation in crowdsourced delivery is incentivized from the crowdsourcer's perspective, encompassing both monetary and non-monetary rewards (Mladenow et al., 2014; 2015; 2016). The remuneration associated with shipments significantly influences couriers' decisions to bid for shipping requests (Ermagun et al., 2020). External motivators, such as financial gain, fame, and prizes, play a crucial role when individuals are driven by factors unrelated to the intrinsic appeal of the activity itself (Hossain, 2012). Additionally, various initiatives underscore non-economic factors, addressing diverse motivations for engaging in crowdsourced delivery. Some emphasize social ties, promoting activities like "shopping with friends," while others highlight environmental benefits, positioning their service as "environmentally friendly delivery." Political declarations and altruistic experiences are also leveraged, as seen in mission statements like "empowering local economies in a connected world" or offers of altruistic joy such as "making someone happy when you travel" (Carbone et al., 2017).

However, participating as a driver in a crowdsourced delivery system often incurs an additional time cost compared to non-participation. Drivers must make a trade-off when deciding whether to accept a delivery request, with travel distance to the task being a critical factor influencing this decision. Quantitative modelling reveals that the distance to the task significantly impacts workers' willingness to undertake it, with a diminishing effect on utility as travel distance increases (Miller et al., 2017; Kim, 2015). This highlights the importance of understanding the dynamics of travel time and distance in shaping couriers' decisions within the context of crowdsourced delivery.

Despite the potential compensation, several factors can act as deterrents to individuals considering participation in crowdsourced logistics. These include the perceived risks of incurring extra costs, the absence of relevant laws, unclear distribution of responsibilities, financial instability, and a lack of social protection. These challenges, collectively referred to as "exploration stage challenges," stem from the underdevelopment of crowdsourced delivery and can impede the willingness of individuals to participate (Huang et al., 2020).

Building upon the insights from existing literature, this research posits the following hypotheses:

H1: The willingness to engage in crowdsourced delivery exhibits a direct positive correlation with both economic compensation and non-economic benefits.

H2: The association between economic compensation, non-economic benefits, and the willingness to participate in crowdsourced delivery is moderated by extra travel time. Consequently, the strength of this relationship diminishes when there is an increase in extra travel time.

H3: The association between economic compensation, non-economic benefits, and the willingness to participate in crowdsourced delivery is moderated by exploration stage challenges. As a result, the strength of this relationship diminishes when there is an increase in the level of exploration stage challenges.

Figure 1: Conceptual model

Methodology. This study follows a quantitative cross-sectional research design. We developed, using the online tool Qualtrics, a questionnaire-based survey to collect data. The language used in the questionnaire was English. To ensure that the respondents to the questionnaire would correctly understand the questions, the survey was pre-tested and validated by research group members. In terms of the sampling approach, a combination of snowball sampling and convenience sampling was employed. The survey was initially distributed within the personal network of the researcher through email. By encouraging participants to share the survey in their own networks (snowball sampling), a more diverse and expansive sample group was achieved. The survey was also shared on social media platforms such as LinkedIn and Instagram to further broaden the reach. The population of interest in this study comprises adults aged 18 or older, reflecting the minimum age required due to the responsibilities associated with participating in crowdsourced delivery. The results were analysed through IBM SPSS. All the items used to operationalize the constructs were based on validated scales in the extant literature. Each construct was measured through multi-item scales that ranged from 1- strongly disagree to 7- strongly agree.

The sample was equally distributed between males and females (49.6% males and 50.4% females). Regarding age, more than half of the participants were under 25 years old (54.7%). Furthermore, most of the participants had a master's degree (62.8%) or a bachelor's degree (33.6%). Finally, most of the participants are students and worked part-time (46.0%).

Results. Cronbach's alpha was computed for each variable to assess the reliability of the scales in this study. The economic motivation and non-economic benefits items exhibited a Cronbach's alpha of .684, slightly below the desired .7 threshold. Despite attempts to improve by removing items, no increase in Cronbach's alpha was observed, and there were no items with a distinctly low item-total correlation. Therefore, the reliability is deemed sufficient to proceed. For the extra travel time variable the Cronbach's alpha is .773. In contrast, the variable exploration stage challenges showed a Cronbach's alpha of .529, raising concerns about its reliability. Despite moderate inter-item correlations, removing items did not enhance Cronbach's alpha beyond .589. While acknowledging this limitation, the study proceeded with this scale for testing the model, emphasizing the need for cautious interpretation of the result. The Cronbach's alpha for willingness to participate in crowdsourced delivery stands at .585. Given its two-item composition, the option of item deletion is not viable. The correlation matrix serves to reveal the strength of relationships between variables. In the matrix, it is observed that extra travel time exhibits a weak positive correlation with economic compensation and non-economic benefits ($r = .027$; $p < .05$; $N = 137$). Additionally, willingness to participate in crowdsourced delivery shows a moderate positive correlation with economic compensation and non-economic benefits ($r = .545$; $p < .01$; $N = 137$). Notably, none of the variables in the model demonstrate a high correlation with one another. The Cronbach's alpha values for each variable are provided in parentheses.

Table 1: Means, Standard deviations, Correlations, and Cronbach's alpha

Variable	M	SD	1	2	3	4
1. Compensation and benefits ¹	4.87	1.09	(.684)			
2. Extra travel time	3.66	1.37	.207*	(.773)		
3. Exploration stage challenges	5.30	0.85	.087	-.001	(.529)	
4. Willingness to participate	4.34	1.43	.545**	.265**	-.061	(.585)

N = 137

¹ = Economic compensation & non-economic benefits

² = Willingness to participate in crowdsourced delivery

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Note: Cronbach's alpha is in parentheses on the main diagonal.

The regression analysis indicates a positive and significant association between economic compensation and non-economic benefits with the willingness to participate in crowdsourced delivery, supporting H1. This implies that both economic compensation and non-economic benefits are positively correlated with the willingness to engage in crowdsourced delivery.

In further exploration, we investigated whether additional factors, namely extra travel time and exploration stage challenges, could impact the identified relationship. However, the results indicate that the connection between economic compensation & non-economic benefits and the willingness to participate in crowdsourced delivery remains unaffected by extra travel time and exploration stage challenges. Consequently, H2 and H3 are not supported. A summary of the hypothesis testing outcomes is detailed in Table 2.

Table 2: Results of the tested hypotheses

H1	The willingness to engage in crowdsourced delivery exhibits a direct positive correlation with both economic compensation and non-economic benefits.	Accepted
H2	The association between economic compensation, non-economic benefits, and the willingness to participate in crowdsourced delivery is moderated by extra travel time. Consequently, the strength of this relationship diminishes when there is an increase in extra travel time.	Rejected
H3	The association between economic compensation, non-economic benefits, and the willingness to participate in crowdsourced delivery is moderated by exploration stage challenges. As a result, the strength of this relationship diminishes when there is an increase in the level of exploration stage challenges.	Rejected

Research limitations and future research. While this study has made valuable contributions to both theory and management, it is not without its limitations. However, these limitations can serve as catalysts for future research. One notable limitation is the overrepresentation of young adults in the sample group, consequently, the sample is less representative of the general population, reducing the study's generalizability. Additionally, 70.1% of the sample group did not possess a motor vehicle, which could potentially influence their responses to the survey on crowdsourced delivery.

Future studies should strive for a more balanced sample that includes individuals of various ages and income levels, while also considering the possession of a motor vehicle. This approach will enhance the study's external validity and provide a more comprehensive understanding of the factors influencing willingness to participate in crowdsourced delivery across diverse demographic groups.

The results of this study are based on quantitative research future research could delve deeper into obtaining concrete data about desired economic compensation & non-economic benefits by combining quantitative and qualitative methods. This approach allows for broad-reaching results and a deeper understanding. Given the contradictions between this study's results and previous research on the impact of extra travel time and exploration stage challenges, future studies should explore whether these factors influence other sample groups. Identifying additional factors influencing the relationship between economic compensation & non-economic benefits and willingness to participate in crowdsourced delivery is essential for creating efficient systems.

Managerial implications. The escalating volume of home-delivered parcels places considerable strain on delivery services, necessitating more efficient and environmentally friendly last-mile delivery solutions. Crowdsourced delivery presents an opportunity for industry managers to implement a novel strategy. However, the success of crowdsourced delivery hinges on the active participation of non-professional delivery drivers. The findings of this research underscore the pivotal role of economic compensation & non-economic benefits in convincing individuals to engage in crowdsourced delivery. Now armed with the knowledge that a positive relationship exists; delivery service managers need to take strategic steps to offer suitable economic compensation & non-economic benefits. The initial step involves managers understanding the specific compensation expectations of potential participants, which may vary across industries, countries, and even regions within a country due to distinct circumstances such as population density, infrastructure, and public transport availability. This information enables the provision of competitive compensation that attracts and retains participants. To maintain participant motivation and satisfaction, managers should regularly review and adjust compensation based on factors like demand, distance, and time. Establishing a clear and transparent payment structure is equally crucial. Participants should have a comprehensive understanding of how their rewards are calculated and when they can expect to receive them. Transparent processes and clear guidelines foster trust and fairness, encouraging more people to join. Moreover, effective communication channels must be established. Managers should maintain regular communication with participants in the crowdsourced delivery system, keeping them informed about changes, updates, and other opportunities within the system. Clear and timely communication builds trust and keeps participants engaged in the process.

Lastly, implementing a monitoring and evaluation program is crucial. Managers should continuously assess the effectiveness of their compensation and benefits strategies by tracking participant satisfaction, performance metrics, and retention rates. Regular monitoring enables managers to identify areas for improvement and make necessary adjustments, optimizing the success of the program through ongoing evaluation. It's noteworthy that this study's results indicate that extra travel time and exploration stage challenges do not have an impact on the positive relationship between economic compensation & non-economic benefits and the willingness to participate in crowdsourced delivery. While this research did not delve into the specific factors influencing this relationship, it highlights the potential for future research to explore and understand these factors, facilitating adaptability and responsiveness in this evolving field.

Originality of the paper. In the contemporary landscape, the last-mile delivery segment presents a formidable challenge for business-to-consumer e-commerce. With the surge in online purchases, retailers face mounting pressure to execute rapid and high-quality deliveries to meet customer demands (Devari et al., 2017). However, the growing fleet of

delivery vehicles required for these services contributes to millions of tonnes of CO₂ emissions, a concerning trend that shows no signs of abating (Hartlief & De Leth, 2021). In response to these environmental concerns, the significance of green delivery systems, such as crowdsourced delivery, is on the rise. This research aimed to ascertain whether a positive relationship exists between economic compensation & non-economic benefits and the willingness to participate in crowdsourced delivery. Additionally, the study explored the potential moderating effects of extra travel time and exploration stage challenges on the relationship.

Based on the results of a cross-sectional quantitative study on economic compensation & non-economic benefits, and the willingness to participate in crowdsourced delivery, it can be concluded that, in this research, a significant positive relationship exists. Nevertheless, in this research, extra travel time and exploration stage challenges do not influence this positive relationship. This research added to the body of knowledge on the above-mentioned relationship and supported those studies that found this relationship. The results show that there are opportunities for delivery services and their managers to respond to these confirmed facts, allowing them to implement this green delivery method effectively. First of all, this leads to a lower number of freight delivery vehicles in (sub)urban areas, thereby benefiting society. Next, it supports firms saving money on delivery, while still providing the same level of service. This innovative design also allows for social collaboration, allowing non-professionals to participate in last-mile delivery strategies and contribute to a community effort that could result in a more sustainable neighborhood (Pourrahmani & Jaller, 2021). By offering the right amount of economic compensation & the desired non economic benefits, the number of people participating in crowdsourced delivery will increase, resulting in a more economical and environmentally friendly system that ultimately raises everyone's quality of life.

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Managing critical raw materials in energy transitioning supply chains: a Resource Dependence theoretical perspective on supply chain management capabilities

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Abstract

Critical Raw Materials (CRMs) are of pivotal importance for the green energy transition, and their demand is generally forecasted to hugely increase over the next decades. Sourcing of CRMs is a pressing issue which is going to highly influence supply chain (SC) management strategies of involved firms in the next years, as the security of this supply is threatened by several geopolitical and business factors. In this scenario, we decided to study which are the SC managerial capabilities and the associated actionable levers and strategic responses that SC managers should adopt to deal with the supply of CRMs. Leveraging on the Resource Dependence Theory (RDT), we envisioned a three-levels theoretical framework by linking SC managerial capabilities with levers and strategies from the RDT. We built several configurations, called scenarios, and adopted an experimental design which implements a vignette-based rank-ordered logit model to assess which are the capabilities whose variation has a greater influence on the SC control over CRMs supply. Our research is based on a survey administered to Italian SC managers which deal with CRMs in their operations. Results will benefit from revealed and unrevealed preferences of SC managers. The former identify the most suitable SC management capabilities in the CRM supply context, while the latter provide the strategic responses and actionable levers most suited to respond to the phenomenon of interest.

Key words: *critical raw materials; resource dependence theory; energy transition; supply chain; capabilities; vignette-base method*

Framing of the research. *The issue of Natural Resource Scarcity (NRS) is increasingly concerning globally, impacting businesses across various levels. NRS can manifest locally or globally, affecting both non-renewable resources like coal, oil, and minerals, as well as renewable ones such as water, wood, and agricultural products (Bell et al., 2012). Within this framework, the transition towards clean energy is instigating a significant revolution, redirecting resource requirements from traditional internal combustion engines powered by coal, gas, and oil to critical raw materials (CRMs) like lithium, nickel, and cobalt, pivotal in clean energy technologies. Forecasts indicate that the demand for CRMs is projected to quadruple by 2040 to support the clean energy transition technologies (IEA, 2021). However, this trajectory poses the risk of slowdowns due to challenges in CRMs supply unless specific issues are addressed: diversifying supply chains to mitigate reliance on a single source, unlocking technological potential, and ensuring sustainability and responsible sourcing (IEA, 2021). As a matter of fact, in recent years, there has been a significant surge in research focusing on Supply Chain (SC) security, with scholars becoming increasingly concerned about various CRMs supply issues (Liu et al., 2024). Of particular concern is the security of CRMs supply, especially with the advancement of new green energy technologies. This concern stems from the potential impact of geopolitics, trade barriers, and unilateral actions on critical mineral supply chains worldwide. In this context, the development of new tools for SC managers which could lead to the minimization of natural resource consumption, waste, and pollution in SC management “appears to be a strategic priority for improving both competitiveness and environmental performance” (Kabongo and Boiral, 2017). Moreover, the uncertainty that arises in supplying CRMs also requires the ability to adapt quickly and effectively to changes in customer and competitive demands (Yusuf et al., 2014). To the best of our knowledge, there’s only the above-*

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cited study from Kabongo and Boiral (2017) which tries to link organizational capabilities and eco-efficiency, arguing that organizational capabilities represent a valuable contribution in improving organizations' resource optimization and competitive advantage.

Therefore, we decided to develop the understanding of the managerial capabilities, strategic responses, and actionable levers that SC managers may adopt to deal with the supply of CRMs. In doing so, we leverage on the Resource Dependence Theory (RDT) as theoretical framing of the research. RDT posits that organizations live in networks of interdependent actors from a resource point of view, and leverage on their power relations to achieve control over scarce resources (Pfeffer & Salancik, 1978). Organizations rely on resources sourced from a multitude of entities, each with its own distinct perspectives and interests, which influence the strategic choices of the firm (Oliver, 1991). This theoretical perspective is particularly useful in our setting, as CRMs supply was born and develops ever more in a context of heightened complexity and interconnectedness of global supply chains (Liu et al., 2024).

We carried out a profound review of the SC management literature to define the **SC management capabilities** that could be used in our conceptual model. According to a review of strategic capabilities in SC (Vishnu et al., 2019), the SC management capabilities in **Table 1** were taken into consideration.

Table 1: SC management capabilities

Capability	Description	References
Flexibility	The ability to cop up with predictable fluctuations in terms of time, volume, mix, price, product, etc. It describes the ability of the supply chain to change or react to environmental uncertainty, to meet the increasing variety of customer expectations without excessive costs, time, organizational disruptions, or performance losses	Vickery et al., 1999; Wang et al., 2016; Manders et al., 2017; Seebacher and Winkler, 2015
Resilience	It enables organizations to react and recover from disturbances and safeguard the substantial stability of their processes within acceptable times and costs	Ribeiro and Barbosa-Povoa, 2018; Chen et al., 2017; Azevedo et al., 2008
Agility	It refers to the reaction time of companies to changes in market conditions and specifically to the speed of response to perturbations	Manders et al., 2017; Christopher, 2000; Lee, 2004
Sustainability	It indicates the management of the supply chain and the collaboration among firms to pursue the goals of the three dimensions of sustainable development: economic, environmental, and social	Seuring and Muller, 2008; Sarkis et al., 2011; Choudary and Sangwan, 2021
Reliability	The ability of the system to substantially maintain its operations in case certain disturbances occur. It reduces the probability of serious alterations to the production system, the related consequences, and the time to return to its expected productivity	Chen et al., 2017; Snyder, 2003; Miao et al., 2009
Efficiency	The ability to economically exploit the potential of the supply chain by reducing procurement costs, lead times, packaging, transportation and inventory costs, and the time devoted to contract management	Kristal et al., 2010; Beamon, 1999

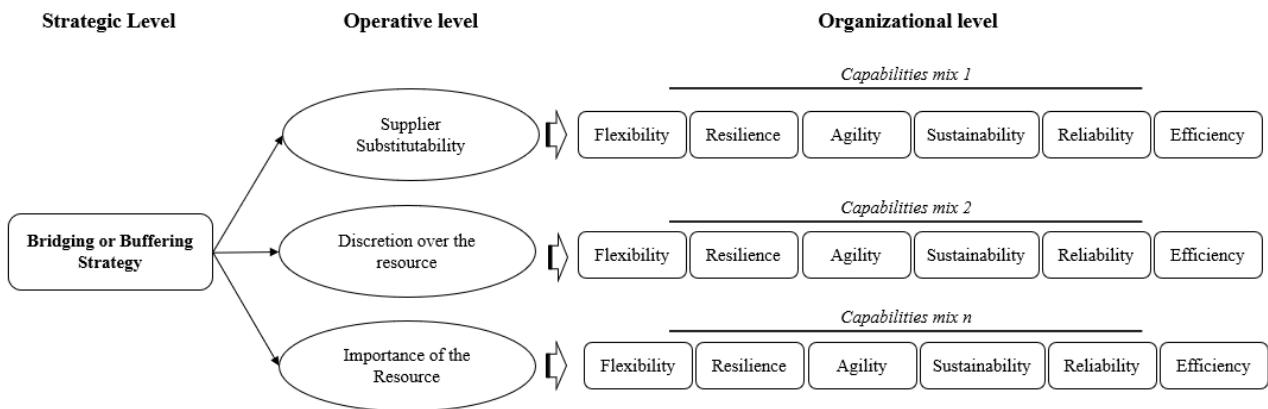
To identify the **actionable levers** and the **strategic responses** to achieve stability and control over CRMs supply, we leveraged on the RDT (Pfeffer & Salancik, 1978; Caniels & Gelderman, 2007; Kalaitzi et al., 2018). The levers that the RDT foresees are the followings:

- **Importance of the Resource (IR):** It encompasses the actions a company can take to reduce the impact from price fluctuations and ensure a continuous flow of material, especially in times of shortage. These actions become increasingly critical in situations of high price volatility and reduction in market supply.
- **Supplier Substitutability (SS):** It refers to the actions aimed at increasing the sources of supply to reconfigure, as necessary, the supply chain to enable rapid and cost-effective supplier switching. The rationale of the above actions depends on the fact that in general the fewer the number of suppliers used the higher is their replacement cost.
- **Discretion over the Resource (DR):** Incorporates mimetic and adaptive actions that a company undertakes to enhance its control over scarce resources. It becomes crucial when resources face socio-political and institutional pressures, and geopolitical and legislative conditions may jeopardize resource procurement.

The two generic forms of strategic response to supply dependency issues envisioned by the RDT are buffering and bridging strategies. **Buffering strategies** involve implementing measures to manage uncertainty by establishing safeguards that shield the enterprise from the risks associated with procurement. Buffering strategies operate externally to the existing supply relationships of the enterprise, intending to reduce exposure to suppliers and mitigate potential negative consequences from disruptions. The enterprise builds slack resources to absorb shocks, such as increased inventory, flexible production processes, a surplus of suppliers, and a supply chain design that avoids dependency on individual entities. On the other hand, **bridging strategies** encompass actions to manage uncertainty through the expansion and strengthening of existing supply relationships. Bridging strategies operate internally within the enterprise's supply relationships, aiming to manage dependence on scarce resources by exerting greater influence over them. Enterprises employing bridging strategies can modify or manipulate their exchange relationships through formal or informal actions. This ranges from building trust with partner firms, investing in collaborative structures, and enhancing information exchange to vertical integration.

Figure 1 illustrates the three theoretical levels examined in this study within the realm of Supply Chain Management in CRMs contexts.

Figure 1: Theoretical framework



Purpose of the paper. This study aims to explore which are the capabilities whose variation has a greater influence on the SC control over CRMs supply. Thus, by analysing the preferred capabilities of a pool of supply chain managers, we could derive the most coherent action levers and their corresponding strategic directions.

The paper poses the following objectives:

- Identify strategic responses to establish a resilient business framework capable of addressing the exogenous pressures impacting procurement processes promptly;
- Uncover actionable levers for managing procurement issues, price volatility, and developing a supply chain aligned with ESG requirements;
- Define managerial capabilities necessary for leveraging these strategies and implementing appropriate responses.

Finally, we want to investigate if these results are dependent on some characteristics of the respondents, such as industry, years of experience, countries being sourced from, and CRMs treated.

Methodology. Our research is based on a primary data collection conveyed through a survey instrument, which was delivered to a sample of Italian SC managers operating in different industries and that sources CRMs from all over the world. By focusing on the SCM we will obtain a structural homogeneity that will improve the processes of statistical inference. The paper adopts a mixed methodology, mainly based on an experimental design which implements a vignette-based rank-ordered logit model (Rologit). At the same time, it beneficiaries from a complex structure where the three levels of analysis, managerial capabilities, actionable levers, and strategic responses are integrated to provide more insights through a combination of revealed and unrevealed preferences expressed by the sampled respondents.

The survey instrument used for the study couples the vignettes with a set of close-ended questions to match the preferences expressed by the respondents through the vignettes with a propensity score that may reveal which respondents' characteristics influence their preferences. Vignettes convey greater realism to the respondent compared to direct-question-based methods, as they provide situational factors that are close to an operative decision-making process (Hyman & Steiner, 1996). As our respondents are expert SC managers or buyers, posing in front of them such questions put them in a situation which is closer to their everyday activities and might result in a less-biased outcome with respect to a classical direct-question method. In order to build the vignettes, we followed the methodological steps proposed by Contini et al. (2020). This is a four-step process composed by: 1) identification of the attributes; 2) definition of the modalities of variation of the attributes; 3) construction of the scenarios; 4) measurement of the preferences from the respondents.

- 1) The attributes were identified in the six SC management capabilities described above.
- 2) The modalities of variation represent the attributes' extremes "which, according to a broad spectrum of possible degrees, could lead to polar levels of importance consumers give to each attribute" (Contini et al. 2020, p. 5). To establish them, we referred to the literature cited in defining the attributes, leading finally to a measurable proxy of the attribute that serves two goals: it is easily understandable by the respondents and it better suits the design of the survey instrument, rather than the entire definitions provided in **Table 1**. The list of attributes and their modality of variations are provided in **Table 2**.
- 3) The scenarios are textual combinations of the attributes where each of them assumes a particular weight. Given weights must be in trade-off among the different attributes in a single scenario, and among different scenarios an equilibrium should be achieved to make the choice actually challenging and thus significative. Our scenario-building was informed by the RDT's strategies and levers, by drafting each scenario in compliance with a strategy-lever matching. Thus, we built **6 different scenarios** where each one presents the combination of the 6 capabilities identified more coherent with the strategy-lever match. Scenarios are provided in **Table 3**.
- 4) Preferences were measured by asking the respondents to **order the scenarios** and to indicate the best configuration for managing supply chain criticalities when dealing with critical raw materials. Thus, they will order scenarios from the preferred one to the less preferable.

Table 2: Attributes, modalities of variation and associated weights

Attribute	Modalities of variation	Weight
<i>Flexibility</i>	Adaptation speed to changes is high	3
	Adaptation speed to changes is medium	2
	Adaptation speed to changes is low	1
<i>Resilience</i>	Material stock and suppliers back up is high	3
	Material stock and suppliers back up is medium	2
	Material stock and suppliers back up is low	1
<i>Agility</i>	Information exchange speed is high	3
	Information exchange speed is medium	2
	Information exchange speed is low	1
<i>Sustainability</i>	Ability to manage collaborations for environmental efficiency and waste reduction is high	3
	Ability to manage collaborations for environmental efficiency and waste reduction is medium	2
	Ability to manage collaborations for environmental efficiency and waste reduction is low	1
<i>Reliability</i>	Speed in reacting to supply chain shocks is high	3
	Speed in reacting to supply chain shocks is medium	2
	Speed in reacting to supply chain shocks is low	1
<i>Efficiency</i>	Ability to manage supplying and distribution costs is high	3
	Ability to manage supplying and distribution costs is medium	2
	Ability to manage supplying and distribution costs is low	1

The survey was organized into three sections: 1) an introductory section where, after the explanation of the aims of the study, respondents were asked to answer profiling questions regarding their job position, their company's size, revenues and industry, the CRMs they deal with in their operations and the countries they source from; 2) the vignette section and their ranking; 3) three final questions covering initiatives to develop the three levers (IR, SS, DR).

Table 3: scenarios constructed in the vignette-based method

Scenario	Attributes and relative weights in each scenario
<i>A</i>	Adaptation speed to changes is high (3) Material stock and suppliers back up is high (3) Information exchange speed is low (1) Ability to manage collaborations for environmental efficiency and waste reduction is low (1) Speed in reacting to supply chain shocks is medium (2) Ability to manage supplying and distribution costs is low (1)
<i>B</i>	Adaptation speed to changes is high (3) Material stock and suppliers back up is medium (2) Information exchange speed is low (1) Ability to manage collaborations for environmental efficiency and waste reduction is medium (2) Speed in reacting to supply chain shocks is low (1) Ability to manage supplying and distribution costs is low (1)
<i>C</i>	Adaptation speed to changes is low (1) Material stock and suppliers back up is medium (2) Information exchange speed is high (3) Ability to manage collaborations for environmental efficiency and waste reduction is medium (2) Speed in reacting to supply chain shocks is medium (2) Ability to manage supplying and distribution costs is low (1)
<i>D</i>	Adaptation speed to changes is medium (2) Material stock and suppliers back up is low (1) Information exchange speed is medium (2) Ability to manage collaborations for environmental efficiency and waste reduction is high (3) Speed in reacting to supply chain shocks is low (1) Ability to manage supplying and distribution costs is low (1)
<i>E</i>	Adaptation speed to changes is low (1) Material stock and suppliers back up is medium (2) Information exchange speed is low (1) Ability to manage collaborations for environmental efficiency and waste reduction is low (1) Speed in reacting to supply chain shocks is high (3) Ability to manage supplying and distribution costs is medium (2)
<i>F</i>	Adaptation speed to changes is medium (2) Material stock and suppliers back up is low (1) Information exchange speed is low (1) Ability to manage collaborations for environmental efficiency and waste reduction is medium (2) Speed in reacting to supply chain shocks is medium (2) Ability to manage supplying and distribution costs is high (3)

As this paper is an ongoing project, data analysis is still to be performed upon the conclusion of the data collection phase. However, a rank-ordered logistic regression model will be performed to test which capabilities have a greater effect on SC control over CRMs supply. Unlike simply identifying the preferred alternative, the model provides the expression of the individual's preferences in terms of willingness to leverage each capability to overcome supply chain management criticalities.

In our study, we utilized individual rankings as the dependent variable to express preferences in terms of capabilities to manage CRMs supply. The logit model is constructed based on a random utility model, where respondents rank multiple alternatives or vignettes (Contini et al., 2020), with m representing the number of alternatives (in our case, $m=6$). Each ranked alternative or vignette serves as an observation.

The utility obtained from each alternative ($j = 1, \dots, m$) is determined by:

$$U_j = b_{0,j} + b_{1,j} X_1 + \dots + b_{k,j} X_k + \epsilon_k$$

X_1 through X_k denote the explanatory variables, representing the variations in attributes. The coefficients $b_{0,j}, b_{1,j}, \dots, b_{k,j}$ express the significance and the weight of each capability to maximize the "utility" of our SC managers sample, while ϵ represents the error terms.

Results. As this is an ongoing project, where the data collection phase is still ongoing, results are yet to come. However, expected results of the data analysis foresee to benefit both from revealed and unrevealed preferences of the sample of SC managers. Particularly, revealed preferences are intended to identify the most suitable SC management capabilities in the CRM supply context, i.e. the capabilities whose variation in the scenarios presented affects the outcome (SC control over CRMs supply) the most. At the same time, given that we constructed the scenarios based on the RDT's construct of strategic responses and actionable levers, the scenarios' ranking will provide us also with unrevealed preferences regarding which strategic responses and actionable levers are most suited to respond to the phenomenon of interest. Finally, the results of the propensity score matching are envisioned to show if the above results are sensitive to the variation of the respondents' characteristics. In particular, we expect to obtain different revealed and unrevealed preferences of SC managers depending on their company's industry, size, CRMs treated, and countries sourced from, given that these attributes have the potential to greatly influence the SC landscape and therefore the preferred ways to accomplish the CRMs supply issues.

Research limitations. This research has some limitations which must be acknowledged. The first concerns the ranking process of the vignette method which is not an easy task to be accomplished given the number of scenarios involved (6) and the different attributes in each of them (6 as well) to be taken into account simultaneously. Even if we selected a very specific and expert audience of SC managers, we cannot be sure that they rigorously evaluated all the options, and we must take into account the risk of some random answers. Secondly, our choice of the management capabilities had to be limited to a restricted number to ensure the proper functionality of the questionnaire. This could have left out some other important capabilities, given that the entire list of SC management capabilities discussed in literature is potentially endless. However, we selected the most implemented and listed in the literature by trying to choose at the same time capabilities distant one from the other, in order to diminish the ambiguities that managers could face in confronting them. Thirdly, the construction of scenarios, even if based on a matching with RDT's strategies and levers, could have been influenced by the biased judgement of the authors related to what scenarios appeared as best to be included in the study. Lastly, the study has been conducted with a sample of Italian SC managers. Future studies should address a larger and geographically wider sample of respondents to improve the generalizability of the conclusions.

Managerial implications. This paper provides managers with important and fruitful implications to tackle a complex and challenging supply such as the supply of CRMs. As a matter of fact, the insights regarding capabilities could be directly transferred into training activities to be focused on the capabilities that this study will reveal as most important to control CRMs supply. Moreover, practical actions to leverage upon the strategies and the actionable levers from the RDT that our study has revealed as most appropriate in the context of CRMs supply should be implemented by SC managers. We believe that our paper could enable and strengthen a national dialogue on CRMs and the management of their supply chains, aiming to foster a reasonable awareness of the situation and prompt economic and government operators to consider the risks associated with the supply of such materials, along with the related geopolitical risks and the possibility of not meeting the timelines of the net-zero transition, with all its potential consequences.

Originality of the paper. Our paper is highly original in most of its components. The contextual framing on CRMs is lacking management literature that explores its characteristics, particularly in relation with SC issues (Liu et al., 2024). The theoretical background adopted borrows strategies and levers from the RDT and capabilities from the various literature on SC risk management: we thus believe our study to represent a "substantive use" of the RDT in the field of SC management, responding to the call of Wry et al. (2013) to substantially engage with RDT's concepts. Finally, the adopted methodology based on the vignette method, is less commonly used in management studies but proves insightful for understanding respondents' preferences. Vignettes are designed to present a series of situational or contextual factors and prompt respondents to evaluate alternative scenarios (Hyman & Steiner, 1996, p.1). By assessing and ranking scenarios, respondents provide information on the relative importance assigned to each attribute comprising the scenarios themselves (Wason et al., 2002). Based on our model construction, this methodology offers a dual innovative contribution. From a more linear perspective, it identifies the capabilities evaluated as preferable by supply chain

managers. However, we also obtain undisclosed information inherent in the designed framework, enabling the identification of strategic levels most aligned with the chosen capabilities. This result can be valuable for understanding whether companies are investing in developing competencies in line with their strategic settings or exploring alternatives, suggesting a strategic direction that maximizes the preferred competency structure.

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Track 13
Sustainability

The rebound effect of responsible consumption: an explorative research on sharing economy consumers

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Abstract

It is commonly believed that the sharing economy (SE), the economic system based on the sharing of goods and services, promotes sustainable consumption. However, the spread of this practice and digital technologies, have opened a debate on the possible negative effects of the SE, questioning its role as a facilitator of sustainability. According to many authors, the cost savings and convenience of this new sharing practice generates the so-called “rebound effect”, i.e. an increased demand for products and services. Given the scarcity of studies about this within the domain of the SE, the present research aims to shed light on the rebound effects that are associable with the SE, focusing on the household level. A qualitative empirical analysis will be performed through the focus group methodology, involving active users of SE from different industries (e.g., food, goods, mobility). The goal is to understand what are the typologies of rebound effects that could be associated with the use of SE services and provide a framework to classify and measure them.

Key words: *sharing economy; collaborative consumption; rebound effect; moral licensing theory; qualitative research.*

Framing of the research. *Globalization and rapid technological developments have contributed to the emergence of a new economic system - the sharing economy (SE) (Araújo, 2021). Since the turn of the millennium, SE has become increasingly relevant (Belezas & Daniel, 2023). Defining the concept of a SE is complicated as SE practices are varied and constantly evolving (Hossain, 2020). Munoz and Cohen (2017, p 21) define SE as “a socioeconomic system that enables an intermediate set of exchanges of goods and services between individuals and organisations that aim to increase the efficiency and optimisation of underutilised resources in society”. SE is a phenomenon in which people participate in a range of activities, including bartering, lending, renting, trading, exchanging and transporting (Möhlmann, 2015; Heo, 2016). Companies in the SE capture inactive resources (Frey et al., 2019) that are then shared or redistributed by consumers (Belezas & Daniel, 2023). The recirculation or redistribution of inactive resources allows people to launch new services or activities and enter new markets (Bernardi & Diamantini, 2018). Therefore, SE is a disruptive innovation that challenges traditional business models (Cohen & Kietzmann, 2014). In this redistribution of inactive resources, consumers exchange or share goods that would otherwise be discarded or left inactive, unused or underused (Martin, 2016; Frenken & Schor, 2017). The SE has always been seen as a sustainable model of production and consumption (Codagnone et al., 2016), as a promising path towards sustainable consumption (Meshulam et al., 2022). It is a post-property economy, where modern consumers value access to services more than ownership (Gazzola et al., 2021). By facilitating access to goods rather than their ownership, it is argued that net consumption is reduced (Belk, 2014; Seegebarth et al., 2016), reducing net production and improving material efficiency (Pouri, 2021; Meshulam et al., 2022), as well as providing other economic and social benefits (Hamari et al., 2016; Acquier et al., 2017; Laukkanen & Tura, 2020; Gazzola et al., 2021). This could reduce resource use and greenhouse gas emissions (Cherry & Pidgeon, 2018). Although sharing practices may exist in non-technological contexts, technology and platform mediation are crucial components of the ES phenomenon (Belezas & Daniel, 2023).*

This new pattern of consumption is profoundly changing consumer behaviour (Pushmann & Alt, 2016). Individuals around the world are beginning to rent, lend, trade, give away and share resources on an unprecedented scale (McAlpine, 2014). The SE enables individuals, organisations and societies to shape the way they live, connect and sustain themselves (Cheng, 2016), as it influences consumption habits by reducing ownership (de Leeuw & Gössling, 2016). Sensitivity towards a more sustainable lifestyle often emerges as one of the prerogatives of sharing users (Khan et al., 2020; Serrano et al., 2021). However, it also emerges that, in some contexts, sustainability is more of a positive side effect than a main topic (Hartl et al., 2018). The motivations that may drive consumers to adopt the SE can be diverse (Davidson et al., 2018). In addition to sustainability, consumers may be driven by economic motivation, which is often complemented by non-

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economic drivers such as social relationships (Lee & Wong, 2021), social projection (Jain & Mishra, 2020), entertainment (Tsai et al., 2021) and anti-consumerism (Ek Styv-en & Mariani, 2020). Intention towards the SE is determined by individual characteristics and in particular age, environmental consciousness (Aguilera-Garcia et al., 2021; Hinojo et al., 2022), Internet and social network use (Hinojo et al., 2022). Enjoyment and economic benefits emerge as the key elements of satisfaction (Tussyadiah, 2016; Santoso & Nelloh, 2017).

However, the enthusiasm for this access-based pattern of consumption goes along with the awareness about the “dark side” of the SE (Curtis & Mont, 2020). From a social perspective, the spread of the SE may indeed generate discrimination (Malik & Wahaj, 2019), misbehaviour (Lambea, 2017), privacy issues (Lutz et al., 2018). In the context of tourism, SE services can generate overcrowding in cities, which could lead to the occurrence of non-civic behaviour such as noise, vandalism and violence (Lambea, 2017). The SE may also generate discrimination that may occur through sharing platforms (Edelman et al., 2017; Piracha et al., 2019): some social groups, such as the poor or elderly, may be excluded because they do not possess the necessary skills in the technological domain (Malik & Wahaj, 2019). Among the social impacts, there is also growing concern about data protection and personal privacy among users of sharing platforms (Lutz et al., 2018). From an economic perspective, the spread of the SE could generate an increase in the prices of other products and the demand for goods (e.g., clothing) and services (e.g., tourism); the increase in net consumption generates negative economic, social and environmental impacts (Retamal, 2017; Ma et al., 2018). In the context of tourism, for example, SE can generate gentrification and overcrowding in cities, leading to higher rental and property prices (Wachsmuth & Weisler, 2018). In addition to social and economic impacts, the environmental impacts of the SE are particularly discussed. Increased procurement may cause increased environmental pressures and resource exploitation (Tussyadiah & Pesonen, 2016; Hossain, 2020).

A specific typology of negative (and unwanted) effect is referred to as the “rebound effect”. The rebound effect was formalised in the aftermath of the energy crisis and thus became initially widespread in the energy economy (Meshulam et al., 2022; Vélez, 2023). Dütschke et al. (2018), in the context of energy conservation, state that the rebound effect occurs when an individual increases consumption of a good or service as a result of an increase in its efficiency: when the unit price of a good or service decreases due to an improvement in efficiency, people demand more of it. By increasing the demand for resources, rebound effects can be seen as a kind of negative spill over (Dütschke et al., 2018). According to Pouri (2021), the rebound effect occurs when greater resource efficiency is followed by an increase in demand, which consequently exceeds efficiencies. The rebound effect can be direct, when it occurs within the same system of resources or services, or indirect, when it occurs outside the same system of resources or services; in this case, the savings (including time and money) obtained from consuming an efficient service are spent on other consumption. From an economic point of view, therefore, the rebound effect is explained by the price savings due to improved efficiency that stimulates demand, leading to higher overall consumption (Meshulam et al., 2022). In addition to having economic foundations, the rebound effect also has psychological foundations. From this last point of view, the rebound effect could be explained by the theory of moral licence, i.e. the cognitive process through which individuals justify immoral behaviour by having previously engaged in moral behaviour, in the same or another domain (Dütschke et al., 2018). In other words, previous good deeds can make individuals free to behave immorally (Monin & Miller, 2001; Merritt et al., 2010). After remembering a previous good deed or performing one, individuals perceive that have permission to behave immorally or to engage in a dubious action (e.g., morally questionable behaviour) without fear of discrediting oneself (Blanken et al., 2015). According to Ottelin et al., (2017), the rebound effect can be analysed at two different levels: household level (micro-rebound) and economy wide (macro-rebound). While the latter refers to price reductions and transformational effects, the former are less challenging research objects, and they can be more easily captured.

In the SE domain, scholars focused their attention on the link between SE and sustainability, identifying the rebound effect as the increased consumption due to the exponential growth of sharing services which leads to a higher consumption, severely limiting the environmental benefits of the SE (Kurisu et al., 2021; Meshulam et al., 2022). This seems to happen mostly when consumers are not driven by environmental concerns, yet by economic and hedonistic reasons or for the accessibility offered by digital platforms. In the absence of pro-environmental awareness, the consumer is likely to spend the money saved to purchase other goods or services with a high environmental impact (Merino-Saum et al., 2023).

Despite the strong association between the two topics, the literature on SE and the rebound effect is not very extensive (Henry et al., 2021). Most of the studies deal with the negative environmental effects of SE, consider different sectors: Warmington-Lundström and Laurenti (2020) study online boat sharing; Makov and Font Vivanco (2018) study smartphone reuse; Wood et al. (2018) study the fashion industry, Meshulam et al. (2022) study the food industry. Therefore, most studies have focused on environmental rebound effects, taking little account of other undesirable effects of the SE (e.g. social, economic).

Purpose of the paper. A review of the literature shows that the SE is often associated with sustainable consumption (Curtis et al., 2019; Meshulam et al., 2022, Pérez-Pérez et al., 2023). However, in recent times, negative effects of this purchasing mode, such as the rebound effect, have been highlighted (Meshulam et al., 2022). The literature on SE and the rebound effect is not very extensive (Henry et al., 2021). There are few studies on the topic and all are recent (e.g. Warmington-Lundström & Laurenti, 2020; Pouri, 2021; Meshulam et al., 2022; Merino-Saum et al., 2023). Above all, the literature to date has often focused only on the environmental rebound effects of SE, but additional negative and rebound effects (e.g. social and economic) could be considered. It would thus seem that interest in the topic is raising in recent years, as a result of an increase in sharing practices. Basing on this premises, the purpose of this research is to shed light on the rebound effects that are associable with the SE, focusing on the household level. This emerges as a gap

in the stream of research about SE and consumer behaviour, that is currently receiving great attention, and for which extended knowledge has been called for (Grieco & Palagonia, 2024). Yet, despite some sparse efforts (e.g., Parguel et al., 2017), an investigation on the possible micro-rebound effect is currently missing. To meet this goal, the research aims to analyse extant literature and integrate it with a qualitative empirical investigation in order to answer the following research questions:

- (i) What are the typologies of rebound effects that could be associated with the use of SE services?
- (ii) How can they be framed and classified (e.g., industry, area of impact, direct/indirect, intensity)?
- (iii) How can they be captured and measured?

Methodology. Consistently with the purpose of the research and the nature of the research questions, an exploratory qualitative study has been considered the most suited approach. In particular, the qualitative focus group methodology was chosen. A focus group is, according to Lederman (1990), “a technique involving the use of in-depth group interviews in which participants are selected because they are a purposive, although not necessarily representative, sampling of a specific population, this group being ‘focused’ on a given topic”. Focus group participants are selected on the basis of having something to say on the topic (Rabiee, 2004). This technique for data collection allows to seize the tacit aspects and the subconscious influences of habitual practices because of the confrontational aspect that would risk being missed in the more traditional setting of individual interviews (Maréchal & Holzemer, 2018).

A series of focus group will then be conducted to better understand the rebound effect associable with the adoption of SE services. The number of participants will be defined taking into consideration the need to allow for emulation and for sufficiently long speaking time for participants (Muylaert et al., 2024). Thus, despite it will hamper representativity and generalization, small groups will be involved in the research. The participants will be selected ensuring their knowledge and use of SE platforms, across different typologies of shareable goods and services, that might lead to different types of effects (Pouri, 2021). Selecting participants with different usage habits will allow to identify those effects that pertain to the SE in general and those that are referable to specific sectors (e.g., fashion, food, mobility).

To ensure full understanding by participants, the topic of the research will be explained before starting the focus group. During the focus group, it would be necessary to investigate the consumer’s adoption of moral behaviour (buying through the SE) and to understand what values drive this choice (e.g., sustainability). The literature suggests that the rebound effect occurs when consumers do not approach the SE for environmental values, but for other reasons (e.g., low price) (Warmington-Lundström and Laurenti, 2020; Pouri, 2021). It would also be necessary to understand the amount of SE products purchased or the number of purchases in other categories to understand the presence or absence of a rebound effect (direct or indirect).

The focus groups will be divided into three main parts. In the first one, participants approach and use to the SE will be deepened, also collecting their impressions and consideration about this consumption practice. In the second, the possible negative effects will be explored, driving participants to reflect upon the side behavior they might adopt, consistently with the definition of rebound effect. In a third part possible proxies to capture and measure these effects will be discussed. If possible, the focus group will be conducted on site, and it will foresee moments with the overall group of participants and moments with sub-groups of users divided according to the specific industry they are more experienced of.

The analysis of the data collected through the focus groups and their interpretation will follow Krueger’s (1994) approach, which provides a series of clear steps to deal with the large quantity and complex nature of qualitative data. Each focus group will be recorded and transcribed in all of its parts, including the opening statements, the breaks, the guidelines. The transcripts will then be content analyzed through the use of codes that will be inductively derived from the collected data.

Results. As the research is ongoing, there are no results to be reported yet. Expected results include the identification and classification of possible rebound effect at consumer level that could be associated to the use of the SE within different industries. This would also allow to understand possible ways to measure these effects.

Research limitations. So far, the main limitations are referable to the proper identification of the boundaries of the research. In fact, the rebound effect needs to be clearly framed, especially against similar concepts such as spillovers, backfire, boomerang, reactance. A second area of severe limitation can be identified concerning the development of the focus group. This is because the object of the analysis pertains to behaviors participants might not be fully aware of, whose connection with the use of the SE needs to be precisely understood. Finally, concerning the focus group, the goal to identify the proxies to measure this effect could be hampered by the ability of participants to understand the task and the ability to the moderator to conduct the focus group. More widely, the qualitative investigations lack the possibility to generalize and compare achieved results due to the small number of involved people, thus more research will be necessary to confirm any findings, also from a quantitative point of view.

Managerial implications. For business managers, it might be relevant to understand consumer behaviour in relation to SE and the negative effects these behaviours might generate. Managers will also be able to measure the negative effects of the SE. In this way, it might be easier for managers to rethink their actions to limit and address the negative effects. Managers, noting consumer behaviour, might think, for instance, about acting internally to improve the business model and avoid rebound effects. Furthermore, managers might think about educating consumers on the correct use of SE. All this might be necessary to ensure that SE continues to be associated with sustainable consumption. This is also necessary

because among the reasons for consumer adoption of the SE is sustainability; if, in the future, consumers realise that it may be unsustainable, the SE companies may suffer possible negative consequences (e.g., loss of consumer trust).

Originality of the paper. *The research adds on the sub-field of research about SE consumers, for which more research is needed, even more concerning the end-users of SE platforms. It focuses on the so-called dark side of the SE, that is underdeveloped, and it raises the issue of rebound effects that happen at consumer level. In this way it aims to fill a gap that emerge in the literature, proposing the exploration of a topic whose deepening could benefit both scholars and managers.*

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Greenwashing Temptation: A Critical Examination of the Legal Approach against Greenwashing

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Abstract

The role of green communication is pivotal today to demonstrate the company's commitment to sustainability. Corporate green communication is correlated to several positive effects which ultimately improve the firm's financial performance. However, all these benefits can be also attained by engaging in greenwashing. Following the recent conceptualization of CSR as a form of regulation incorporating voluntary and mandatory norms (Sheehy, 2015), current greenwashing literature emphasises the need to extend regulation about green communication as a solution to reduce greenwashing (legal approach). In line with this approach, political actors and governments are introducing regulations against greenwashing occurrences. By combining the self-love concept (Rocha & Ghoshal, 2006) with the phenomenon of greenwashing, this conceptual paper challenges the legal approach against greenwashing as the only solution to counteract the phenomenon. A new concept emerges from the conceptual analysis: the Greenwashing Temptation (GT). The GT concept allows to understand that not only greenwashing is a phenomenon embedded in the profit-driven principle, but also the legal approach to counteract greenwashing implicitly assumes the supremacy of the profit-driven motivation. Based on a discussion about the effects of anti-greenwashing regulations on the GT, we propose here a different avenue that could discourage greenwashing by challenging its foundational reason. Instead of creating financial disincentives, we call for the urgency of promoting ethical thinking in management and marketing studies.

Key words: Greenwashing; Profit-driven principle; Business Ethics; Mandatory CSR, Green Marketing

Framing of the research. *Businesses today face a growing pressure from regulatory bodies and civil society to embrace eco-friendly practices to mitigate their ecological footprint (Jiang et al., 2023). Within this scenario, the role of green marketing and communication is pivotal to demonstrate a company's commitment to sustainable practices. In the current era of eco-capitalism, green marketing is becoming a central topic in marketing studies (Groening et al., 2018) and the megatrend of sustainable consumption is critical to understand consumers today, especially Generation Z (Borah et al., 2024).*

Initiatives related to Corporate Social Responsibility (CSR) and green communication are emerging as critical sources of corporate legitimacy (Seele & Gatti, 2017). Corporate legitimacy in turn is correlated to several business advantages which may ultimately improve the financial performance of a company (Deephouse, 1999). Research also suggests that corporate green communication positively affect corporate reputation (Baum, 2012), consumers' purchase intentions and behaviours (Borah et al., 2024; Dekhili & Achabou, 2013; Spack et al., 2012) and their willingness to pay (Laroche et al., 2001), customer satisfaction and positive word-of-mouth (Gasbarro & Bonera, 2021).

However, all these benefits can be also attained by engaging in greenwashing, that is a form of "cosmetic communication" (Vollero, 2013, p.4). Indeed, green communication may improve firms' reputation and performance regardless of the actual company's green conduct (Seele & Gatti, 2017). This is why an increasing number of organizations today are "not walking the talk" (Walker & Wan, 2012), meaning they engage in greenwashing.

Over the last decades, the practice has grown enormously, and the techniques to greenwash are increasingly sophisticated (Gatti et al., 2019). The frequency of greenwashing-related scandals, the potential damages for organisations truly committed to the ecological transition, the high profile of the companies involved, and the effect on scepticism that greenwashing has on stakeholders' perceptions highlight the need for a comprehensive understanding of the phenomenon. In particular, it is essential to find how to detect and prevent this unethical practice (Montgomery et al., 2023).

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To provide a deep understanding of the phenomenon and its implications, marketing and management scholars are increasingly addressing the topic in their studies. The academic literature related to greenwashing is currently booming, with more than 3.393 articles retrieved from ABI/Inform ProQuest database mentioning “greenwashing” or “greenwash”⁴. A longitudinal analysis of publications about greenwashing shows a constant increase in scholarly articles. In particular, from 2008 there has been a significant growth of papers on the topic (Gatti et al., 2019). The recent Montgomery et al. (2023)’s literature review reveals the ongoing interest in this area of research, with about 50 management papers about greenwashing in 2005, 100 in 2011 and more than 500 in 2021.

Greenwashing-related research has extensively discussed definitions of the concept, as well as several classifications of greenwashing typologies and techniques. Drivers and consequences of greenwashing have been also addressed in literature (e.g. Vollero, 2013), with several empirical studies measuring greenwashing effects on stakeholders, especially in B2C contexts (Gatti et al., 2019; Montgomery et al., 2023).

However, as claimed by Montgomery et al (2023), there is an urgent need to gain insight into how to prevent or disincentivize the practice. Following the recent conceptualization of CSR as a form of regulation incorporating voluntary and mandatory norms (Sheehy, 2015), some scholars emphasise the need to extend regulation about green communication as a solution to reduce greenwashing (e.g. Delmas & Burbano, 2011). In line with this approach, political actors and governments are introducing regulations against greenwashing occurrences (e.g. Guides for the Use of Environmental Marketing Claims (Green Guides) in US, the French Climate and Resilience Law (2023), The Greenwashing Law Council of Australia (2023)). The next chapter discusses the legal approach to counteract greenwashing, presenting the status-quo of EU regulations against greenwashing.

The legal approach to counteract greenwashing. One of the most widely accepted definitions of greenwashing defines it as “disinformation disseminated by an organization so as to present an environmentally responsible public image” (Concise Oxford English Dictionary, 10th edition). Some academics consider greenwashing as synonymous with false green communication. Other scholars, however, claim that greenwashing also indicate corporate green claims lacking validation from third-party certifications. According to this perspective, greenwashing refers to “making claims that are neither substantiated by a credible third-party certification nor by evidence” (Alves, 2009). An alternative approach proposes that greenwashing is the strategic selection of positive information regarding corporate environmental characteristics or behaviors, combined with the obscuration or the minimizing of negative issues. The selective perspective looks at greenwashing as a tactic to create a favorable environmental image by avoiding the communication of unsustainable practices, while promoting the corporate engagement into pro-green activities. The discrepancy approach expands this view by considering the discrepancy between the corporate environmental performance and its communication. Therefore, this perspective assumes that engaging in greenwashing corresponds to “not walking the talk” (Walker & Wan, 2012). Regardless of the different conceptualizations and definitions discussed in literature, there is a general agreement about the association between greenwashing and disinformation. In addition, research on the field suggest that greenwashing must be intentional to be classified as such (Mitchell & Ramey, 2010). Therefore, “genuine” greenwashing is always characterized by intent (Seele & Gatti, 2017).

For years greenwashing has been discussed in literature as an ethical issue as the misleading communication happens in a legal grey zone and depends on the eye-of-the-beholder (Giesler & Veresiu, 2014; Seele & Gatti, 2017). However, following the recent new conceptualization of CSR as a legal entity (e.g. Cominetti & Seele, 2016; Gatti et al., 2019; Sheehy, 2015), greenwashing is entering the political and legal fields. The theorization of greenwashing as a legal matter has been proposed as the solution to the problem about how to reduce and disincentivize greenwashing occurrences (e.g. Delmas & Burbano, 2011).

The evolution of the CSR concept towards an integration of voluntary and mandatory aspects has affected green communication and greenwashing in several ways. Political authorities today play a critical role in influencing green practices and green communication. In particular, in relation to green communication it’s not just that governmental entities have the authority to sanction misleading environmental claims under existing corporate laws, they also increasingly dictate the timing and manner in which companies communicate their ecological initiatives. There is a clear movement towards a more active governmental participation in the realms of green disclosure. For instance, since 2014 the EU legislation requires large and publicly listed companies to regularly publish reports detailing the social and environmental challenges they face, as well as the effects of their business activities on the society and the environment. The Eu regulation has become even more strict since January 2023, with the introduction of the new Corporate Sustainability Reporting Directive (CSRD). The Directive, set to affect reports published in 2025 for the fiscal year 2024, mandates companies covered by the CSRD to adhere to the European Sustainability Reporting Standards (ESRS) developed by the European Financial Reporting Advisory Group (EFRAG).

As clarified by the aforementioned example, today companies must comply with several regulations and standards. The rules of the game are changing. Green communication, and so greenwashing, are increasingly becoming a legal issue, dealing also with accounting and law and not just with management and marketing. To understand the level of evolution of greenwashing-related jurisdictions, in the next section we briefly summarize the main norms against greenwashing developed in EU. This constitutes an example of the development of greenwashing regulations. It is important to note here that a similar trend towards a strict anti-greenwashing regulation is observable in several other countries and nations all over the world (e.g. US, Australia, UK).

⁴ Data retrieved from ABI/Inform ProQuest database. English scholarly articles. 08-03-2023.

EU regulations against greenwashing. *The European Commission has developed two main proposals to address corporate greenwashing: the “Proposal for a Directive on empowering consumers for the green transition and annex” (called the Green Transition Proposal) and the “Proposal for a Directive on substantiation and communication of explicit environmental claims” (called the Green Claims Directive). By combining and revising the Unfair Commercial Practices Directive (UCPD) and the Consumer Rights Directive, The Green Transition Proposal, introduced in March 2022, emphasises and strengthens regulations concerning environmental claims. This proposal introduces new categories and instances to the list of green communication practices that are considered deceptive or misleading. This list is in line with some greenwashing categorizations discussed in marketing and management literature (de Freitas Netto et al, 2020) and reflects some of the well-known seven sins of greenwashing developed by the environmental consultancy Terrachoice (later acquired by UL) in 2007. However, what is particularly interesting here is that these categories of greenwashing are becoming a legal subject. Following the recent trend of CSR towards the inclusion of mandatory and legal aspects, greenwashing as well is entering the legal sphere.*

The Green Claims Directive, published in March 2023, represents the other significant initiative of the European Commission aimed at addressing the issue of greenwashing within the EU. This directive requires companies within the EU to provide substantiated and verifiable proofs about any environmental-related claims or labels they voluntarily employ, such as “green”, “ecological”, “carbon neutral”, or “eco-friendly”. The directive also indicated one or more authoritative bodies in each EU member state to evaluate the adherence to specific green communication directives. To enforce adherence, it proposes penalties, including monetary fines, for those who fail to comply with regulations. In certain states, these penalties can amount to as much as four percent of a company’s annual total revenue.

The legal approach against greenwashing has been proposed in literature as the solution to reduce greenwashing practices. The absence of legislation and limited punitive measures, on the contrary, are considered drivers for greenwashing (Delmas & Burbano, 2011). Two main reasons support this approach. From one side legal initiatives may increase transparency and accountability of corporate green communication. The establishment of standards and regulations can act as a deterrent against greenwashing. Given the necessity to provide reliable data or evidence to support environmental claims, it becomes harder for companies to mislead the public and so to engage in greenwashing. From the other side, sanctions and fines, while providing a partial compensation to the victims of greenwashing, may also create an inhibitory effect which may discourage companies to engage in greenwashing (Sun & Zhang, 2019).

However, we suggest here that not only greenwashing seems to be favoured by the profit-driven principle, as we will discuss in the next chapter, but also the legal approach to contrast greenwashing intrinsically assumes that the only responsibility (or purpose) of business is to increase its profits. Indeed, by creating a financial incentive (or disincentive) to NOT engage in greenwashing, they assume the profit-driven principle as the most important guiding force of current decision-making processes.

The profit maximization logic behind greenwashing and the legal approach to counteract it. *In order to understand how the profit-maximization logic favours the diffusion of greenwashing, we need to clarify first why firms engage in green communication.*

One of the main reasons for companies to engage in green communication is to gain corporate legitimacy. Legitimacy is linked to several benefits, including enhanced access to resources, improve partnerships with other businesses, and the recruitment of a more effective and motivated workforce. According to management research, achieving corporate legitimacy can ultimately lead to better financial outcomes (Deephouse, 1999). In the current era of eco-capitalism green marketing and communication are therefore new sources of corporate legitimacy (Seele & Gatti, 2017).

However, all these benefits can be also attained by engaging in greenwashing. Following signalling theory, false or misleading environmental claims can alter stakeholder perceptions (to obtain legitimacy) for two main reasons, which must work together for greenwashing to be deemed effective. The first is the perceived benefits an organization gains by signalling a commitment to environmental issues, irrespective of the truth of such commitment. Given that green communication is positively correlated with increased perceived legitimacy, even companies with a poor environmental profile are incentivized to engage in green communication. The second reason is linked to the difficulty stakeholders have in distinguishing between authentic and merely symbolic environmental commitments. This difficulty is largely due to the information asymmetry that exists between the signaller (the company) and the receivers (its stakeholders) and the complex nature of scientific knowledge that underpins many environmental claims, making accurate interpretation by the general public challenging. Consequently, companies can misuse green communications as a way to falsely signal their commitment to the environment, thereby achieving pragmatic legitimacy. By attaining legitimacy through greenwashing, companies aim at increasing their profits. Therefore, the profit-driven principle, supported by many mainstream management theories, can be considered a driver of greenwashing, supporting the practice when it does not break the law.

What is particularly interesting, however, is that the legal approach against greenwashing, even if guided by the good intent to reduce such unethical practice, is responsible for perpetuating the same profit-driven logic. The effect of anti-greenwashing regulation goes into two directions: first it creates a cost disadvantage associated to greenwashing (fines). The existence of strict regulations increases the risk of being punished. Secondly, by regulating green communication it enhances the control on the consistency between corporate green activities and green communication. Even in this case, however, it creates a disincentive based on reducing the benefit of engaging in greenwashing. The costs of engaging in false or misleading green communication become too high compared to the financial benefit perceived by companies.

While the legal approach may indeed contribute to effectively reducing greenwashing occurrences, we suggest here that it supports the profit-driven logic and therefore, under some circumstances, it could backfire good management practices.

Therefore, instead of challenging greenwashing when it occurs or making too costly the practice, as the legal approach does, we stress the opportunity to challenge the profit-driven principle as the only motive guiding corporate decision-making processes (see also Pastore and Ugolini, 2020). As claimed in the next chapter, some best practices which challenge the profit-driven perspective have already emerged: greater attention from the enterprises to implementing environmental management practices and putting attention to social sustainability (De Giacomo & Frey, 2022), and an increased number of businesses involved in certification processes (i.e. B-Corp certification) (Hunter and De Girolamo, 2023).

A new framework to understand motivations behind corporate green engagement. While the profit-driven principle is able to explain the main reason behind greenwashing and why regulations are important to counteract this practice, a paradox does persist. While greenwashing is growing at an unprecedented level, several companies are engaged today to transform their approach to business in an attempt to integrate sustainability into their strategy. Certified B Corporations (B Corps) or purpose-driven companies are an example. B Corp is a certification provided by B Lab, a global non-profit organization, to those companies that meet rigorous standards of social and environmental performance, accountability, and transparency. The idea behind this approach is that business go beyond traditional profit-driven models, aiming to create a positive impact on society and the environment. Purpose-driven companies are companies engaged in finding “profitable solutions to the problems of people and the planet”. Profit is not an end in itself, but rather a means to address social and environmental challenges. The establishment and proliferation of B Corps and purpose-driven companies challenge the conventional view that assumes profit as the only driven principle of business success.

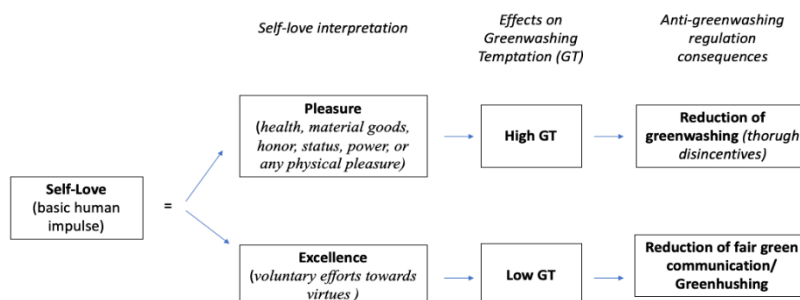
Not only good management practices challenge the self-interest model implied in the profit-driven principle, but also management literature has increasingly criticised the reductive nature of the self-interest model beyond the profit-maximization logic.

Management literature supporting motives other than self-interest has a long history, even if it has been relegated for years into marginal academic debates. Several examples of unselfishness in business have been discussed in literature, as individuals declining profitable deals they find unjust, or offering assistance to others without expecting anything in return (e.g. Elster, 1990; Frank, 1987). Even Adam Smith, often considered the father of the self-interest logic, refuses the reduction of human motivations to just self-interest. Even though in his *Wealth of Nations* Smith describes human actions as selfishness, he does not consider self-interest as the only motive for market exchanges, claiming that self-interest is moderated by an inner sense of justice (Smith & Cannan, 2003).

To address the limits of the profit maximization logic, in the last decades management scholars have proposed new concepts and theories integrating ethics into management studies. To this regard, an interesting contribution comes from Rocha and Ghoshal (2005) in their *Journal of Management Studies* article *Beyond Self-Interest Revisited*. They suggest a new framework to explain preferences, behaviours, and outcomes based on the concept of self-love, that is “the inclination of human beings to strive for their own good and perfection” (Aristotle, 1984; Aquinas, 1963). This framework integrates both self-interest and unselfishness motives into one perspective, therefore providing a valid interpretation to the coexistence of greenwashing cases and good corporate green practices. In line with Aristotle, Rocha and Ghoshal (2005) assume that the basic human tendency is toward good. However, human beings understand good in different ways: pleasure or excellence. Excellence results from voluntary efforts towards virtues and, according to Aristotle, it is the greatest of all the goods. Only excellence helps to develop the full human potential. True happiness is therefore attained when individuals cultivate their excellence, that is virtue.

Following the self-love framework (Rocha & Ghoshal, 2006), we suggest that both greenwashing and a fair corporate green engagement are motivated by the same basic human impulse towards good in general (self-love). Companies and managers engaged in greenwashing interpret “good” as “pleasure”, defined as a state attained through possessing health, material goods, honor, status, power, or any physical pleasure (Aristotle, 1984). The search for pleasure, which intricately assumes the self-interest as only motive, may guide human choices and behaviors in a personal life, as well as in management practices. However, following Aristotle, pleasure does not help individuals to reach happiness. Only excellence does.

Figure 1: The Greenwashing Temptation (GT) Framework



Based on our analysis, we develop a conceptual framework (Figure 1) introducing a new concept: the Greenwashing Temptation (GT). According to the Oxford Languages dictionary, a temptation indicates “the desire to do something, especially something wrong or unwise”. We therefore define Greenwashing Temptation as “the desire or propensity to do greenwashing”. By combining the GT with the self-love concept, the GT framework explains why some professionals consciously choose to not engage in greenwashing even when they perceive an economic advantage in doing so and the law does not forbid it. These individuals, motivated by a sense of moral duty or virtue ethics (self-love/excellence), may resist engaging in greenwashing (because they perceive a low GT) and instead prioritize transparent and truthful communication with their stakeholders. The GT framework also allows to understand the different effects of anti-greenwashing regulations on counteracting the practice. While in the cases of high GT, the legal approach may discourage greenwashing, in cases when GT is low, the legal approach may inhibit good management practices and/or encouraging greenhushing phenomena (Galli et al. 2023). Therefore, in these cases (low GT), we suggest that a different avenue to counteract greenwashing is necessary to promote good management practices.

Theoretical and Managerial Implications. Our conceptual analysis suggests that while establishing governmental regulatory frameworks may have a positive inhibitory effect on greenwashing practices, regulations alone cannot eradicate the Greenwashing Temptation. In addition, when GT is low, anti-greenwashing regulations may challenge good management practices. Indeed, our framework suggests that while the legal approach seems to be effective in discouraging greenwashing when GT is high, it does not promote fair green communication when GT is low. In cases when the motivation behind a corporate green engagement is value-driven (excellence), anti-greenwashing regulation may inhibit corporate green communication because it is not perceived as something beyond the law, therefore it does not allow to reach excellence. Given that green communication is becoming something to conform to (not “a voluntary effort towards virtues”), good companies may decide to be silence about it, thus engaging in greenhushing.

Based on the discussion about the effects of anti-greenwashing regulations on GT, we propose here a different avenue that could discourage greenwashing by challenging its foundational reason. Instead of creating financial disincentives, we call for the urgency of promoting an ethical approach in management and marketing studies. Scholars in the field should adopt a more comprehensive approach, where environmental and social concerns are integrated into the ultimate purpose of businesses. Putting ethical thinking at the core of management education would not eradicate greenwashing, given that, according to self-love theory, managers could always decide to focus on “pleasure” instead of “excellence”. However, as claimed by Ghoshal (2005), if we wish our students to contribute to building “delightful organizations”, we will have to teach them theories that describe how they can do so.

Limitations of the Study. This short paper is a work-in-progress conceptual paper. The paper needs to elaborate further the “ethical approach” proposed as an alternative avenue to counteract greenwashing. Additional theoretical frameworks could be integrated into the discussion to support the formulation of the new concept of GT. For instance, the literature of motivating principle for CSR is particularly relevant in this context. To this regards, Maignan and Ralston (2002) identify different principles discussed in CSR communication as driving forces of corporate commitment to CSR: performance-driven and value-driven. The two concepts could be related to excellence and pleasure, and they could be integrated into the GT framework.

The paper should also expand the discussion about the philosophical assumptions behind the self-interest view (*homo economicus*) and the profit maximization logic to better support the establishment of the self-love concept as a more comprehensive approach to understand human behaviors in management. In addition, to understand consequences of anti-greenwashing regulations in case of low vs high GT, empirical research is needed. The concept of GT should be therefore operationalized to test its effects in greenwashing-related phenomena.

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Harnessing collective bargaining for fostering sustainability and competitiveness: fact or fiction?¹

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Abstract

Modern societal and environmental challenges increasingly pressure business organizations to embrace corporate sustainability. However, achieving a “just” transition in the business sector involves navigating tensions among multiple and sometimes divergent demands of economic, societal and environmental sustainability, reconciling the needs and expectations of a wide range of societal actors. Addressing this challenge necessitates participatory and collaborative instruments that, while advancing corporate sustainability efforts, also mediate between societal actors in the attempt to reconcile divergent needs. In this view, this short paper aims to examine the opportunity offered by collective bargaining as a participatory and inclusive instrument apt at promoting corporate sustainability while reconciling divergent economic, societal and environmental demands through negotiation among societal actors, namely labor unions and employers’ representatives. The research project is ongoing as it examines the collective bargaining process aimed at the renewal of the national collective labor contract within the Italian metalworking industry in 2024. The present extended abstract thus presents the theoretical groundings, methodological approach and expected results.

Key words: ESG; collective bargaining; national collective labor contracts; sustainability; metalworking industry.

Framing of the research. *Amidst today’s social and environmental challenges, business organizations increasingly emerge as crucial actors in advancing sustainable development (Bansal & DesJardine, 2014). The evolution of social, regulatory, and competitive landscapes over the past fifty years – due to increasing regulatory pressures, ecological and societal uncertainties, and growing environmental awareness – lead the business sector to recognize corporate sustainability as an indispensable paradigm to ensure legitimacy and competitiveness in the long-term (Hoffman & Bazerman, 2007).*

Yet, achieving a sustainable transition of the business sector involves navigating tensions arising from multiple and sometimes divergent demands of economic, social and environmental sustainability: this implies aligning efforts towards environmental improvement with the protection of societal actors (e.g. workers, local communities, etc.), all the while upholding market competitiveness and profitability (Hahn et al., 2015; Van der Byl & Slawinski, 2015). The complexity of the challenge calls for collaborative efforts from all societal actors – from private enterprises to labor unions, from trade associations to public institutions – in ensuring a lasting and “just” transition of the business sector (Linnenlueck & Verreynne, 2017).

Collective bargaining joins societal parties – employers’ representatives and labor unions – in the process of negotiating terms and conditions of employment, ranging from compensation and welfare benefits to job security and

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workplace safety (Doellgast & Benassi, 2020). The economic dimension has always been a primary focus of the collective bargaining process, aiming to balance demands for secure and fair employment, competitiveness, and profitability (Doellgast & Benassi, 2020); however, in recent years, environmental concerns (e.g. climate change mitigation, resource consumption, etc.) and the need to ensure a socially just transition are gaining increasing attention in collective bargaining, as a result of increasing pressures for corporate sustainability (EESC, 2023). The inclusive and participatory nature of collective bargaining indeed makes it a privileged instrument for balancing the diverse stakeholders' needs and expectations while articulating the sustainable transition of a business sector.

In this view, the research project explores collective bargaining as a participatory instrument to promote sustainability within the business sector, fostering divergent social, environmental and economic demands through negotiation among societal actors. The research project is ongoing as it examines the collective bargaining process aimed at renewal of the national collective labor contract within the Italian metalworking industry in 2024.

Purpose of the paper. There is a certain consensus that collective bargaining can drive the green transition and promote a more environmentally sustainable economy (EESC, 2023; Odessky, 2019). The Trade Unions Congress, UK, has indicated key benefits for unions in integrating green issues into collective bargaining, such as achieving cost savings, aligning organisations with grand challenges, offering green jobs, and staff engagement. Moreover, some countries, such as Australia, Canada and the United Kingdom, are already involved in environmental goals, such as those related to climate protection, directly into collective bargaining by labour unions. Trade unions are starting to see new opportunities that arise from the sustainability transition, where labour markets may become more aligned to sustainability in terms of training, organisations and development of labour. Green jobs have started to be developed, as they contribute to reducing environmental negative consequences by promoting the development of sustainable companies and economies from an environmental, economic, and social point of view.

Despite the consensus on the potential importance of collective bargaining to promote sustainability and despite the examples of green collective bargaining in some countries, the European Economic and Social Committee (EESC) has recognized that in EU Member States, there are limited and inconsistent experiences of green bargaining (EESC, 2023). Some challenges that the literature has identified include the balance of power among negotiators and the will of different parties to turn collective bargaining into an instrument for regulating environmental issues (Gutiérrez and Tomassetti, 2020, p. 19). Moreover, the transformative process of the industry that is required to be aligned to a socially just transition should be based on the definition of long-term industrial relationships and policies that are needed to support the change of the industrial systems towards a higher level of sustainability. Those aspects require making decisions in the present, but the cost-opportunity can be evaluated in the future. The complexity of this transformative process of the labour market is also due to the complexity of the representative process regarding the collective interest in the transition phase, as the interests of different actors should be considered: companies, employees, local communities, society, and environmental movements. There is consensus that the labour market should become an open social system where multiple actors collaborate together to create the conditions for a just transition. But at the same time, that idea should still be developed (Tomassetti, 2021).

EESC highlights the importance of making more efforts to promote green collective bargaining and foster cooperation between employers and workers by including clauses related to environmental sustainability in collective bargaining to promote a green and socially just transition. The paper aims to explore the role that collective bargaining may have in promoting a sustainable transition by considering environmental and social issues and, at the same time, ensuring a high competitiveness of companies and industrial sectors. A contribution of the study is to focus on the opportunity to include Environmental, Social and Governance (ESG) aspects in collective bargaining. We consider collective bargaining as a participatory governance tool aiming to promote a dialogue among different social parties (i.e., employers and employees, but also governments and institutions). Thus, the research questions of the paper are the following:

Rq 1: Can collective bargaining support companies in contributing to a sustainable and just transition by also ensuring a high level of competitiveness within industrial sectors?

Rq2: What are the main challenges that may affect negotiations among social actors regarding the inclusion of ESG aspects in collective bargaining?

Methodology. Given the need for more understanding on the role of collective bargaining for fostering industry sustainability and competitiveness, we choose to address our research question through an inductive case study. The methodology is particularly suited when processes are complex, when the analyzed case is unique and particularly convenient (Gehman et al., 2018), and when phenomena are new and poorly understood (Eisenhardt, 1989). Moreover, case studies are not at odds with generalizing findings (Flyvbjerg, 2006). The case we would like to analyze is the new ESG CCNL (Collective National Labour Contract) for the metalworking industry, encouraged by Federmeccanica. This is an extreme case (Pettigrew, 1990), as this is the first Italian example of ESG collective bargaining.

Research setting

In order to understand the research context, we believe it is important to detail not only who Federmeccanica is and how it works but also how the process of collective bargaining for approving the CCNL works.

Starting with the latter, collective bargaining refers to “all negotiations between one or more employers (or their organizations) and one or more workers’ organizations (trade unions) for determining working conditions and terms of employment, including issues related to pay and working time [...]. A number of dimensions of collective bargaining (‘bargaining structure’) have been identified. These include coverage which refers to the percentage of employees directly

affected by agreements; the level that bargaining occurs at; the scope or range of topics encompassed by bargaining; and depth – that is, the extent to which agreements are jointly implemented and reviewed” (Eurofound). Among these, one of the issues addressed by the political debate in recent times concerns the introduction of an adequate minimum wage for workers, also following the presentation by the European Commission of a directive on the topic, definitively approved on 14 September 2022, which Member States will have to implement within two years of its entry into force. The minimum wage can be established by law (legal minimum wage), by national collective bargaining, or by the combination of the regulatory source with collective bargaining. Currently, the minimum wage exists in all EU Member States: in 21 countries there are legal minimum wages, while in 6 Member States (Denmark, Italy, Cyprus, Austria, Finland and Sweden) minimum wage protection is provided exclusively by collective agreements. Thus, collective bargaining and CCNL are particularly tricky and significant for Italy. The debate usually also revolves around other issues (above identified), such as the level of the minimum wage, the procedures and criteria to be established for the periodic adjustment of the minimum wage and the involvement of trade unions and employers' organizations in its definition. Therefore, the social parties and the collective negotiation, with their decisions, thus play a central role in this matter.

Federmeccanica (Federazione Sindacale dell'Industria Metalmeccanica Italiana – Association of the Italian Metalworking Industry), have been established in 1971, aiming to protect, in the field of labor law and in particular in industrial relations, the interests of the Italian metalworking industry. It not only represents and promotes the metalworking industry in relations with public opinion and Italian and European institutions, but it also represents and assists the participating groups in relations with trade union organizations and with Italian and European institutions; moreover, it stipulates the national collective labor agreement (CCNL) for the category. It joins Confindustria, and it is a non-profit and apolitical entity. Through the metalworking groups established in the Territorial Industrial Associations of the Confindustria System, *Federmeccanica* associates approximately 16,000 companies employing 800,000 people.

Its role in guiding the renewal of CCNL is critical. In 2016, through its commitment, collective bargaining agreements marked a turning point for industrial relations in the metalworking industry. In fact, in 2016, the social partners in the metalworking industry agreed to renew the collective agreement, after a long dispute and rift between FIOM (Federation of White and Blue-Collar Metalworkers), *Federmeccanica* and ASSISTAL (National Association of Plant Manufactures, Energy Service Companies and Facility Management), FIM (Italian Federation of Metalworkers) and UILM (Italian Union of Metalworkers). In this context, since 2016, *Federmeccanica* aims to have a key role in negotiating for encouraging new and challenging CCNLs. The last metalworking industry agreement, signed in 2021, will expire in June 2024. Given that sustainability is now mandatory and is becoming the primary objective of states and also of large economies, it is no longer just a political issue but also an economic one. The largest international operators have put ESG (Environment, Social, Governance) issues on their agendas, in order to achieve a global paradigm shift including work and the way of doing business. There is no doubt that being at the forefront of these issues provides companies with a competitive advantage. Thus, according to the president of *Federmeccanica*, the new CCNL should integrate some ESG dimensions. The basic idea is that the fulfillment of the contractual rule itself becomes a useful action to achieve qualified standards for ESG purposes. Solid foundations already exist in the National Contract, from welfare to training, gender issues, or safety at work. However, at the same time, there are margins for further development, both from a formal point of view, i.e. giving the current provisions a look that responds to the ESG certification parameters, and from a substantial point of view, by identifying other actions and new areas that can make it possible to strengthen, improving it, the existing system with an even more marked ESG footprint. The ESG CCNL could include further tools to be implemented at the company level to raise the bar of sustainability and competitiveness, and useful guidelines could be included to guide companies and collaborators. With the support of authoritative experts, including academic ones, and operators involved in the ESG field, *Federmeccanica* has started, in September 2023, its work to arrive ready for the contractual appointment with ideas and proposals which, according to them, will allow Italian mechanics, companies and collaborators to continue to be an absolute reference in the industrial panorama.

Based on the outcomes of this extensive and intricate process of collective bargaining, which is expected to culminate soon, given the need to sign the new CCNL, we will understand if and how this will be a suitable case for our objectives. At the moment of writing, the bargaining has already started, with concerns and requests coming from the trade unions and with the implementation of a first platform proposal (February 20th, 2024) for the renewal of the CCNL. This platform aims to address the needs of metalworking workers and offer appropriate solutions to prioritize industrial labor and invest in future generations. Depending on the ongoing negotiation, we will comprehend to what extent this case could be considered the first successful Italian implementation of an ESG CCNL.

Potential data collection and analysis. For data collection, a deep immersion in the setting is mandatory. Qualitative research, specifically case study research, requires a deep immersion in multiple kinds of data (Gehman et al., 2018), which may help in revealing the focal phenomenon. We aim to use, if possible, interviews and video calls – important for most studies (Gioia et al., 2013) –, as well as document study. While document analysis refers to the review by the researchers of written materials, interviews are used to gain knowledge and insights into a person's experiences, opinions and motivations (Gioia et al., 2013). Interviews can generally be classified as open (e.g. free conversation) or semi-structured (Punch, 2013), where open-ended questions and an interview guide are used.

We expect to start data collection and data analysis if and as soon as the bargaining is a semi-definitive step. The best approach for data analysis will be chosen once all the data have been collected (Langley & Abdallah, 2011).

Results. *The research project aims at advancing the current understanding of the role of national collective labor contracts as mechanisms for promoting sustainability efforts within industry sectors and strengthening market actors' responsiveness and preparedness towards the grand challenge of sustainable transition while enhancing long-term competitiveness. To this aim, the study expects to examine the dynamics inherent in the collective bargaining process, illuminating the interactions between social actors as they negotiate ESG requirements. This process-oriented approach will help identify sustainability topics where the interests of social actors align, as well as tensions that may hinder progress. In this view, we expect the results of the study will provide insights into two main areas, discussed below.*

First, we expect that the results will contribute to the understanding of ESG topics prioritized by social actors within the process of collective bargaining. In line with the broader RQ1's objective, which explores collective bargaining and national labor contracts as levers for the sustainable transition of the metalworking sector, while upholding competitiveness, the study's results will shed light on ESG topics that are integrated into the collective bargaining process. These topics will be deemed promising in terms of aligning sustainability efforts with competitive advantage. Thus, the results of the study will contribute to addressing the following sub-questions: (i) What ESG issues are deemed more central to the needs and demands of the diverse constituents of the metalworking industry? (ii) What ESG issues are considered promising levers for the competitiveness of the overall metalworking sector?

Given the preliminary documental analysis – based on existent and publicly available documentation –, we expect social actors will assign greater importance to social sustainability and governance requirements during the negotiation process, compared to environmental sustainability issues, for several reasons. Firstly, social and governance aspects already feature prominently in national labor contracts within the metalworking sector, particularly regarding issues such as fair compensation, welfare, health and safety, and financial and non-financial disclosure. In contrast, environmental sustainability issues have not previously been addressed within collective bargaining processes. This may deter social actors from raising environmental concerns during negotiations, fearing resistance from other parties. Second, social welfare aspects and workers' benefits (such as improved work-life balance and extended parental leave) are often linked to increased company attractiveness, enhanced worker retention, job satisfaction, and productivity. Consequently, we anticipate that social topics will be more closely aligned with the national contract's objective of fostering competitive advantage within the sector. On the contrary, environmental sustainability issues may be linked to easier access to credit and financial resources or cost reductions.

Second, the results will contribute to the understanding of conflicts and tensions that may arise in the interaction between social actors throughout the collective bargaining process, and that may hamper the successful integration of ESG criteria in national labor contracts. Collective bargaining indeed necessitates balancing diverse actors' needs and demands, which are often conflicting, as they encapsulate divergent priorities between labor and employers; however, sustainability constitutes a pressing priority for all social actors, and thus is seen as a promising avenue to partially reconcile such tensions. Still, given the unprecedented experience of pursuing corporate sustainability (at social, environmental and governance levels) through national labor contracts, resistance to change may arise. Thus, in line with the broader RQ2, the study will provide insights into the major tensions that may affect collective bargaining among social actors regarding the inclusion of ESG aspects in the collective national labor contract.

Based on the initial analysis of previous collective bargaining processes in the metalworking sector, we expect two major tensions between social actors to arise during the negotiation of ESG criteria. Firstly, tensions may surface between large enterprises and SMEs affiliated with Federmeccanica. Due to their larger resource endowments, large companies in the metalworking industry may not view additional ESG requirements as burdensome. These companies usually have organizational structures dedicated to sustainability and are often certified according to relevant schemes (e.g., ISO 14001). Consequently, sustainability requirements may represent a marginal additional effort for them. On the contrary, SMEs may perceive ESG requirements as too demanding, given their limited resources and capabilities: additional costs entailed by complying with ESG requirements may damage the narrative of aligning sustainability efforts and competitiveness. Such differences may pose challenges to finding common ground between these entities, potentially obstructing the bargaining process. Second, tensions may arise between companies and labor unions: the latter may perceive the introduction of ESG requirements in the contract as a means to accrue additional benefits to the employers rather than employees, while diverting attention during the bargaining process from more central monetary and compensation issues. This may lead to resistance to change on the unions' side.

Research limitations. *This research is a work in progress. Thus, we believe there are some important limitations that could serve as a starting point for improving both the current research project and future research.*

First of all, even if the collective bargaining has started and there is a first draft of a new platform, the negotiation is still ongoing, and we do not know yet if this will be a successful case worth deepening.

Furthermore, one of the main principles of process and dynamics research is that data should be collected over time (Gehman et al., 2018) to capture the process studied. Our research and potential data collection and analysis will focus on the first step of the story, which is the negotiation for the ESG CCNL. If, on one side, at the time of writing, more time is mandatory to see how the negotiation proceeds, on the other side, if the ESG CCNL is signed and approved, to be able to understand if the agreement can be a concrete instrument for fostering sustainability and competitiveness in the metalworking industry, we'd need to wait and see its realization and evolution. Are companies able to implement the new CCNL rules? Are they able to collect ESG-related data? Is it actually fostering internal changes? These are only some of the questions to answer while studying the practical effects of the new agreement.

Managerial implications. *Given that the theme of sustainability is becoming the primary objective of states and large economies, which imposes a global paradigm shift for all dimensions of human life, including work and the way of doing*

business, national contracts, also negotiated according to sustainability (ESG) principles, may function as pioneer instruments in the sector in the pursuit of cutting-edge solutions. The different actors involved in the collective bargaining but, above all, large companies, should foster its realization to allow the industry transition toward a more sustainable way of working and a higher competition and, in addition to that, to help small entities to grow and embrace ESG obligations. In this context, the role of managers in fostering, planning, implementing, controlling and re-designing the ESG requirements included in the CCNL is key.

Originality of the paper. Some initiatives have been carried out in the area of green collective bargaining, for example, in the UK. However, there is a gap in the research on exploring the role of collective bargaining in promoting sustainability transition and a high level of competitiveness for companies.

Moreover, in Italy, the identified case would be the first example of ESG collective bargaining.

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Construct of Corporate Social Responsibility Scepticism: Implications and Insights from the Literature

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Abstract

This study provides a scoping review on the corporate social responsibility (CSR) vis-à-vis scepticism scholarship and appraises how the two concepts have been examined and contextualised in relation to one another. The findings illustrate the intricate process nature of CSR scepticism, given that CSR can yield both buffering and boomerang effects on CSR practitioners. The thematic analysis performed on 58 studies (published from 2007 to 2022) elaborates on CSR scepticism as a multi-dimensional construct with three distinctive typologies identified with regards to how the two topicalities have been cross-examined in the extant literature: “Typology 1: Dispositional scepticism and the buffering effect of CSR”, “Typology 2: Situational scepticism and the boomerang effect of CSR”, and “Typology 3: Centrality of CSR scepticism and its mitigation”. This study offers a conceptual insight into the prevalent issue of CSR scepticism, whilst also informing marketing, communication, and public relations professionals about the necessity of mitigating CSR scepticism, which has emerged as a barrier to effective CSR implementation and communication processes.

Key words: Content analysis; CSR; literature review; scepticism; skepticism; stakeholder management

Framing of the research. Stakeholders have become more observant and pessimistic about corporate actions and communications in general, and this era has been witnessing a surging decrease in trust amongst stakeholders (Du et al., 2010). Within the corporate social responsibility (CSR) context, scepticism arises when stakeholders perceive that companies engage in and communicate about their CSR actions with ulterior motives. Due to heightened levels of public scepticism, it is imperative that companies discern what CSR activities to undertake and how to disseminate CSR information effectively to accommodate a vast variety of different stakeholders and attain their legitimate support (Skarmeas and Leonidou, 2013). Nevertheless, the inherent risk of public scepticism is involved in both CSR implementation and communication processes (Kim and Rim, 2019). To a certain extent, stakeholders might personally experience discrepancies in CSR claims, and they may develop dispositional tendencies to resist organisations’ persuasive attempts by deliberately questioning their CSR efforts and imposing their sceptical views on the organisations’ intentions and motives (Yoon et al., 2006). Such public scepticism exists on so large of a scale that it imposes a hardship on contemporary business organisations as they strive to demonstrate their CSR efforts (Xu and Kochigina, 2021). The crux of the ironic argument is that those stakeholders are sceptical when companies “do not” engage in CSR to fulfil their social and ethical responsibility; nevertheless, they are still sceptical when companies “do” engage in CSR endeavours. This irony is contrary to the common notion that CSR is a win-win proposition to create the so-called “shared value” for business and society (Porter and Kramer, 2006).

Public scepticism can be so pervasive that CSR endeavours may become a double-edge sword for businesses when they are not perceived positively by stakeholders. Despite the fact that scepticism towards CSR can obstruct the success of CSR implementation and communication, CSR scepticism in its own entirety has not been well conceptualised and contextualised in the extant literature (Kim and Rim, 2019; Rim and Kim, 2016). The extant proliferation of CSR research has largely indicated a consensus that stakeholders are generally more optimistic about companies that engage more attentively in CSR initiatives (e.g., Becker-Olsen et al., 2006; Ellen et al., 2006). However, scepticism is simultaneously more prevalent surrounding organisational attempts at CSR implementation and communication processes (Kim and Rim, 2019). Stakeholders have become more doubtful about corporate CSR actions and communications (Connors et al., 2017) since they are under the impression that business organisations largely employ CSR as a marketing tactic to capitalise on consumers’ goodwill (Pirsch et al., 2007).

In the CSR context, scepticism originates from the conflicting paradox between the “for-profit” nature of business and the “altruistic” nature of CSR itself. CSR scepticism can be defined as the general public’s inclination to question and doubt an organisation’s claim of socially responsible positions and actions (Du et al., 2010; Rim and Kim, 2016). If stakeholders perceive that a company is using CSR strategically to reap certain organisational benefits, they are more likely to be sceptical of the concerned CSR practice. The crux of the argument is that stakeholders may care less about a

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company's CSR actions than about its motives (Ellen et al., 2006). Their responses to CSR are a result of not only the actual CSR practice itself, but also their evaluation of the CSR practice in relation to the company as a whole (Becker-Olsen et al., 2006).

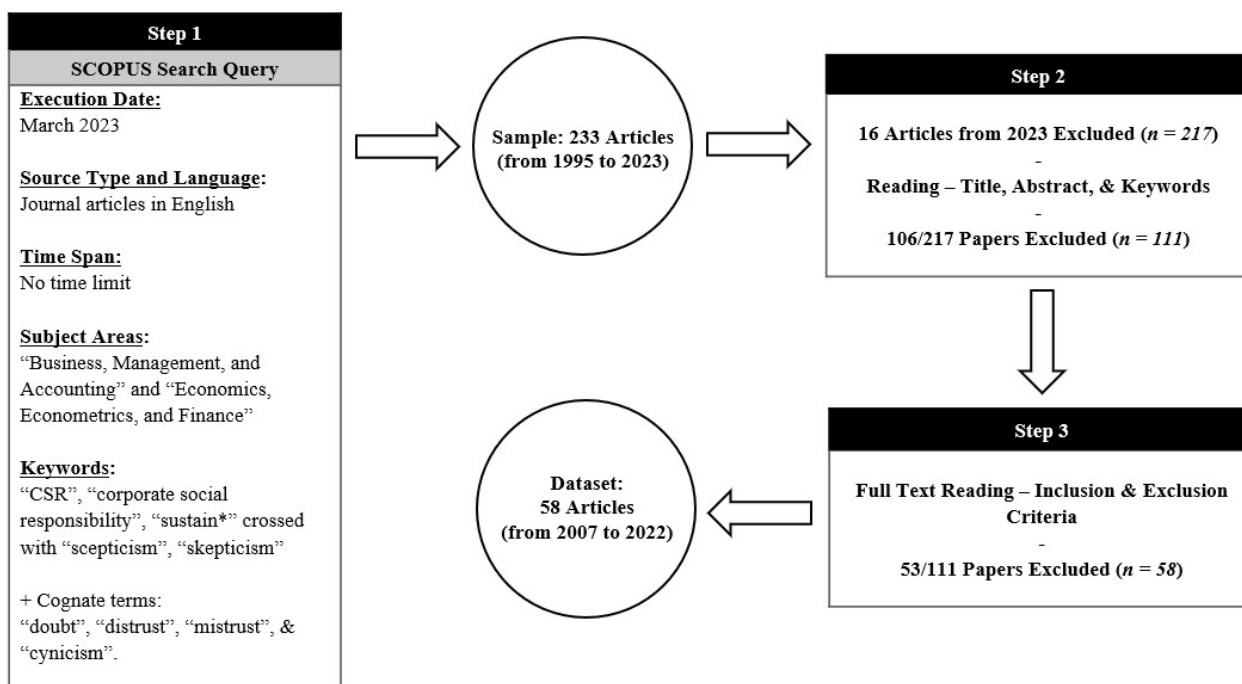
Despite the prevalence of public scepticism towards corporate CSR implementation and communication, studies on the antecedents and outcomes of CSR scepticism remain limited. This dearth of research is imperative to address for several reasons. First, scepticism is an intriguing phenomenon manifesting within a range of corporate governance strategies, including firms' CSR communication (Dunn and Harness, 2018; Love et al., 2022; Ma and Bentley, 2022), cause-related marketing (Vlachos et al., 2016), or crisis communication (Jung and Lee, 2022; Wei and Kim, 2021). Second, negative consumer responses towards corporate actions are quite detrimental, such as boycotting (Klein et al., 2004), cynicism (Chon and Kim, 2021; Serrano Archimi et al., 2018), or distrust (Ginder and Byun, 2022; Kim and Rim, 2019). Third, scepticism against CSR is on the rise although contemporary businesses have been extensively implementing CSR initiatives and publicising their CSR-related accomplishments. On another note, there have been reported incidents of corporate controversies that have worsened both issues of corporate transparency and hypocrisy in relation to organisational attempts at implementing and disseminating CSR actions (Lee and Comello, 2019).

Purpose of the paper. Contemporary business organisations engage in various CSR initiatives to accomplish their strategic goals or make positive contributions to their respective societies. Astonishingly, scepticism has become more prevalent surrounding CSR claims since stakeholders are sceptical of the extent to which those companies live up to their professed standards. Notwithstanding the abundant CSR research in various disciplines, the management literature over-fixates on CSR strategic paybacks, and less attention has been devoted to examining why CSR may be under siege. The purpose of this study is to analyse the process nature of CSR scepticism as a multi-dimensional construct through a scoping literature review of the current output of CSR vis-à-vis scepticism literature. This study takes an initial step towards conceptualising CSR scepticism by not only analysing its process nature, but also elaborating on its underlying determinants and outcomes. By doing so, this review contributes to a nascent research stream explicating the current workings and linkages between the CSR and scepticism topicalities, whilst aiming to inspire a continuous effort in theorising and pragmatizing research pertaining to the issue of CSR scepticism in its entirety.

Methodology. This literature review adopted the scoping method. According to Munn et al. (2018), researchers may choose to conduct a scoping review when the purpose is to scope a specific literature body, clarify concepts, or investigate the conduct of previous research. In addition, scoping reviews are particularly "useful for examining emerging evidence when it is still unclear what other, more specific questions can be posed" (Munn et al., 2018, p. 2). This objective is appropriate for the descriptive nature of this study, given that it does not emphasise any specific research questions in relation to the research context in question (i.e., the process nature of CSR scepticism).

To warrant academic rigour and quality, this review followed the five-step framework proposed by Arksey and O'Malley (2005): (1) identifying the study's scope, (2) identifying the scale of relevant studies, (3) selecting relevant studies, (4) charting the data, and (5) summarising and reporting results. Figure 1 below illustrates the first three steps of the literature search.

Figure 1: Execution steps of the literature search



In Step 4, thematic analysis was performed on the dataset, and we manually examined the full contents of the 58 articles against their strategic focuses, research aims, and findings. The bibliographic details of the dataset were recorded and developed into a literature database via MS Excel. Once established, the database was examined for patterns, themes, and anomalies. Following the data analysis, the descriptive and thematic findings in Step 5 could be elaborated.

Results. *The dataset comprises 58 articles published between 2007 to 2022. Those articles were published across 29 journal outlets, including Public Relations Review (n = 6), Journal of Business Ethics (n = 5), Journal of Marketing Communications (n = 5), Corporate Social Responsibility and Environmental Management (n = 4), Journal of Brand Management (n = 4), and Journal of Business Research (n = 4). Additionally, majority of the articles came from the United States (n = 31) and certain European countries, specifically the Netherlands (n = 4) and the United Kingdom (n = 3). France, Germany, Italy, Spain, and Greece each contributed one study. In Asia and Oceania, India and Malaysia each contributed 2 articles, and one article originated from Australia. In terms of theoretical foundations, this review has identified 29 theories explicitly referenced in 44 studies. The remaining 15 studies were not framed around any theories. Attribution theory was the most utilised theoretical framework (n = 12). Other prominent theories include legitimacy theory (n = 3), cognitive dissonance theory (n = 3), and stakeholder theory (n = 2), to name a few.*

Furthermore, the thematic analysis performed on the 58 papers enabled a further exploration of their research aims, strategic focuses, and findings. Our aim was to reconcile recurring themes that may explicate the CSR scepticism construct and its dimensions and outcomes. Following the thematic analysis, we could identify and distinguish three distinctive typologies to explain how the CSR and scepticism topicalities have been cross-examined and contextualised in the current literature in relation to one another.

Typology 1: Dispositional Scepticism and the Buffering Effect of CSR

Typology 1 comprises 14 articles. This category represents the overarching “buffering” effect of CSR on public scepticism and posits that scepticism is relatively “inherent” amongst stakeholders. Studies falling within this scope typically revolve around the role of scepticism as an underlying antecedent issue in relation to various CSR-related practices.

The extant literature has provided an insightful implication that public scepticism towards organisational altruism of CSR generally stems from the conflicting paradox between the “profit-maximising” priority of business organisations and the “altruistic” nature of CSR. The empirical work of Kim and Rim (2019), for example, posited that scepticism can be more inherent in nature amongst cynical stakeholders. In fact, for-profit business organisations are perceived to be seeking profit maximisation as their main priority. This naturally leads people to doubt the ulterior motives of any corporate CSR practices and perceive them as less altruistic. Kim (2022) has also stated that CSR scepticism is rising, and it is intricately connected to the capitalistic nature of businesses. This perspective is also applicable to and more prominent in the context of stigmatised industries operating in controversial business settings (Austin and Gaither, 2019). Prior research has shown that public scepticism is more inherent towards controversial corporations, and scepticism is an antecedent of corporate CSR-related actions.

In addition, the empirical evidence captured in the dataset has largely indicated that CSR scholars have been striving to identify factors influencing scepticism towards organisational altruism and stakeholders’ perceptions towards CSR motives and manifestations (Teah et al., 2022). When the attribution of ulterior motives is triggered, stakeholders are more likely to evaluate organisations and their CSR practices in a negative manner (Vanhamme and Grobbsen, 2009). Amidst public scepticism against CSR actions and communications, organisations ought to attenuate the scepticism towards their altruism and pursue to build a quality brand-consumer relationship (Shankar and Yadav, 2020). Specifically, the study of Park (2022) has investigated the mediating role of scepticism in determining how corporate social advocacy (CSA) can help build quality stakeholder relationships. In this regard, corporations can signal their sincerity by engaging in CSA-related practices and taking a more definitive and supportive stance on major societal issues (Park, 2022).

Although CSR communication enhances the visibility of a company’s CSR efforts, the more the company communicates, the more likely negative consumer reactions (i.e., scepticism) may also occur (Love et al., 2022). The work of Kang and Atkinson (2021) stressed on pro-environmental CSR messages in the hotel industry and examined the effects of message objectivity and consumers’ CSR-oriented and advertising-oriented responses. Their findings demonstrated that objective and outcome-focused messages are more effective in reducing consumers’ scepticism and leading consumers to perceive CSR as more public-serving. Likewise, Hall et al. (2021) have built a conceptual model that demonstrates the effects of CSR storytelling and suggested that organisations can leverage the storytelling process to convey their CSR actions in a more effective manner. On another note, the empirical study of Jung and Lee (2022) emphasised the importance of maintaining a continuous and consistent CSR communication efforts to sustain favourable perceptions and expectations of stakeholders.

Typology 2: Situational Scepticism as the Boomerang Effect of CSR

Typology 2 consists of 25 articles in the dataset. This category represents a literature body that examines the “boomerang” effect of CSR on scepticism. Studies within this category typically address CSR as a causal determinant perpetrating public scepticism, whilst also addressing various impacts of scepticism.

Business organisations have a strong tendency to inform stakeholders that they are committed to CSR, and they

disseminate their CSR activities accordingly. Nevertheless, there is also risk involved in communicating about CSR initiatives. Previous studies have demonstrated that consumers are generally sceptical about CSR claims since they are under the impression that companies mostly employ CSR as a “window-dressing” or “green” strategy to take advantage of consumers’ supportive intentions (Connors et al., 2017; Leonidou and Skarmeas, 2017). This perspective is also applicable to when CSR is strategically employed to attenuate a crisis situation (Ham and Kim, 2020). Companies can be perceived negatively although they do good deeds through CSR. This phenomenon can be explained as the boomerang effect of CSR which consequently induces public scepticism.

Skarmeas and Leonidou (2013) and Skarmeas et al. (2014) have further explained how consumer scepticism towards CSR develops and its influence on important consumer-related outcomes. Their findings revealed that attributions of egoistic and stakeholder-driven motives elicit consumer scepticism towards CSR, whilst value-driven attributions inhibit scepticism. In fact, this consumer behavioural aspect has been examined thoroughly by several studies. To exemplify, the work of Kwon and Ahn (2020) studied the effect of green CSR scepticism on consumers’ attitude, reactance, and behavioural intention. The empirical work of Alhouti et al. (2016) identified factors that influence the perceived authenticity of CSR initiatives. Likewise, Samuel et al. (2018) further reiterated the importance of addressing the CSR authenticity gap. Their verdicts have largely agreed that, in addition to engaging in CSR, a strategic approach must also consider the extent to which consumers perceive their CSR initiatives as authentic and genuine.

Additionally, prior studies have also suggested that scepticism towards CSR is closely related to scepticism towards conspicuous forms of CSR communication (Kim and Rim, 2019) which may include CSR claims with regards to environmental sustainability (Cheah et al., 2022), CSR messages (Dunn and Harness, 2018), or CSR advertising (García de los Salmones and Pérez Ruíz, 2018). Certain studies have also addressed consumer scepticism associated with cause-related marketing (e.g., Singh et al., 2009; Vlachos et al., 2016).

Additionally, research on public attributions of companies’ CSR motives has been pushing the forefront of CSR literature. Previous studies on CSR motives have empirically demonstrated negative effects of public scepticism towards a wide range of CSR manifestations. When publics question a firm’s sincerity, they tend to discredit the firm’s CSR actions and messages and may instead pose a negative evaluation (Skarmeas and Leonidou, 2013). How publics perceive a firm’s motivations for engaging in CSR initiatives is crucial, given that their perceptions and evaluations may alter the overall effectiveness of corporate CSR activities (Ellen et al., 2006).

Typology 3: Centrality of CSR Scepticism and Its Mitigation

Typology 3 includes 19 articles in the dataset. This category represents a literature body that centrally examines CSR scepticism in its own entirety. Studies belonging to this typology typically emphasise the impacts of CSR scepticism on organisational or consumer outcome variables as well as the presence of external variables and their roles in mitigating the issue of CSR scepticism itself.

Previous research has provided empirical insights into the role of corporate strategies that aim to mitigate public scepticism. Moreno and Kang (2020) conducted a study to examine the role of consumer evaluations of a company’s CSR communication process from both content and delivery perspectives. They suggested that the delivery of CSR information can be more important than the content itself in inducing scepticism. Their findings also indicated that the fit between a company’s core values and the CSR activities they communicate can play a significant role in alleviating scepticism, whilst the fit between consumers’ personal values and the CSR activities does not have significant effects on scepticism.

On a different note, a few studies have adopted a more psychological approach in understanding consumer behaviour with regards to CSR scepticism. The paper from Ramasamy et al. (2020), for instance, has examined the effect of human values on consumer CSR perceptions towards cosmetic companies’ CSR practices. Consumer scepticism was found to have a moderating effect on the relationship between human values of openness to change, self-transcendence, and conservation towards their CSR perceptions. Their results allow decision makers to better understand the influence of consumers’ value system on their CSR perceptions, whilst elucidating the boundary conditions posed by scepticism and amplifying the need for organisations to emphasise the notion of CSR authenticity. Another empirical study from Moscato and Hopp (2019) was conducted to examine certain psychological aspects of sceptics or cynics, involving the role of personality characteristics in consumer scepticism of CSR activities.

Within the CSR communication domain, Dunn and Harness (2018) adopted a mixed method approach in their study to explain how social media communication can shape CSR attributions and influence consumers’ CSR scepticism. Similarly, Joireman et al. (2018) have explored whether company advertisements promoting a firm’s good actions generate more positive responses when the advertisements contain concrete CSR-based claims or images. The work of Pomeroy and Johnson (2009a) emphasised the pros of corporate image advertising and its central role as a communication tool to help inform the public about organisations’ CSR effort. Their other work (Pomeroy and Johnson, 2009b), on the other hand, critically discussed the cons associated with CSR-based corporate image advertising, whilst also proposing two message variables, namely social topic information and social impact claim specificity.

The abundance of research pertaining to scepticism vis-à-vis CSR communication implies that companies face a major challenge in successfully and authentically communicating their good deeds, especially if their contributions are closely related to their core business activities (van Rekom et al., 2014). Overall, companies are becoming more involved in a wide array of CSR activities, and they often publicise their good deeds to demonstrate their CSR efforts, yet Elving (2013) proposed that organisations ought to be mindful and attentive when communicating about their CSR commitment.

Research limitations. *It is equally important to note that this scoping review has certain limitations to be disclosed. First, this review purposefully targeted only peer-reviewed journal articles to maximise academic rigour and quality. In this regard, we may have neglected the grey literature which may also offer insightful perspectives. Second, we only utilised Scopus to constitute the dataset. Thus, we may have missed some other relevant works published on other platforms. Another limitation is that only articles written in English were targeted. The concept of CSR has been known to differ and vary across different social, economic, and cultural settings. As a result, we may have neglected some other relevant studies published in foreign languages. Future research may consider more types of publications and databases to accumulate more studies and constitute larger datasets for future systematic reviews or meta-analyses. Future research may also incorporate studies published in foreign languages to help enhance the current knowledge.*

Managerial implications. *This study contributed a conceptual insight and clarity into the prevalent issue of CSR scepticism, whilst also informing marketing, communication, and public relations professionals about the need to mitigate CSR scepticism, a prominent managerial issue that can obstruct effective CSR implementation and communication processes. To enhance and maximise public support and legitimation of CSR implementation and communication, academics and practitioners need to comprehend the process nature of CSR scepticism, thereby to effectively manage the said issue and its detrimental impacts.*

Originality of the paper. *This scoping literature review depicts the status quo of the extant scholarly research pertaining to CSR scepticism. The relevance and growing importance of this research area is quite apparent as there has been a surging interest in examining CSR scepticism from both academics and practitioners from inter-disciplinary fields. Our consolidation of the current research output has unveiled important determinants and outcomes of CSR scepticism as a multi-dimensional construct. As scepticism is a complex concept which originates from a wide array of research streams (e.g., marketing, public relations, communication, management, consumer behaviour, etc.), our consolidation of insightful implications and contributions from previous studies enabled us to explicate the CSR scepticism construct and its process nature.*

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Il ruolo degli intermediari nella Simbiosi Industriale: il caso Regusto

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Abstract

Nel contesto della Simbiosi Industriale, dove le aziende collaborano per ottimizzare l'uso delle risorse e ridurre gli sprechi, gli intermediari svolgono un ruolo cruciale nel semplificare e facilitare i processi, creando condizioni ottimali per l'implementazione di tale strategia. Questo articolo esplora l'impatto degli intermediari sullo sviluppo della SI attraverso una ricerca qualitativa, esaminando la loro influenza sulla rete. Utilizzando la metodologia case study, la ricerca esamina Regusto, un intermediario che facilita le connessioni tra le imprese per prevenire gli sprechi nelle catene di approvvigionamento alimentare e non alimentare attraverso una piattaforma digitale. Gli intervistati rivelano che il coinvolgimento di Regusto è stato cruciale nell'avviare progetti di sostenibilità, come quello dell'azienda A1, dimostrando il ruolo dell'intermediario sia come facilitatore che come catalizzatore per iniziative sostenibili. Inoltre, lo studio mette in luce il cambiamento culturale catalizzato dagli intermediari, sottolineando l'importanza di promuovere una mentalità sostenibile e pratiche eco-innovative. Nonostante le limitazioni della ricerca, lo studio fornisce interessanti spunti sull'importante impatto degli intermediari sullo sviluppo della SI, offrendo implicazioni per l'accademia, i policy makers e i leader aziendali interessati a comprendere e a promuovere l'eco-innovazione e le pratiche sostenibili nei contesti industriali. L'originalità dello studio risiede nel suo focus sul ruolo degli intermediari nella SI, trascurato in letteratura, e nel suo contributo alla comprensione della loro influenza sulle pratiche industriali sostenibili e sul cambiamento culturale.

Parole chiave: simbiosi industriale; intermediari; ricerca qualitativa; economia circolare.

Stato dell'arte. A fronte delle recenti problematiche sociali ed ambientali, le aziende sono sempre più inclini ad adottare modelli economici alternativi e sostenibili (Porter, 2021). Negli ultimi anni, si è riscontrato un crescente interesse nelle imprese ad adottare pratiche ispirate al modello economico circolare in vari settori industriali (Dey, et al., 2022). L'Economia Circolare (EC) costituisce un modello economico che propugna la sostenibilità attraverso una radicale trasformazione del tradizionale paradigma economico. In questo nuovo approccio, il concetto di rifiuto non è più relegato a una posizione marginale (Murray & Haynes, 2017), bensì assume un ruolo centrale, diventando sia il punto di partenza che di arrivo di un processo produttivo. Attraverso meccanismi collaborativi che coinvolgono una pluralità di attori economici, nella catena di produzione ed approvvigionamento, il rifiuto si colloca al cuore del processo (Ciulli, et al., 2020; Schöggel, 2023; Kirchherr et al., 2017). L'attuazione dell'EC richiede approcci differenziati a seconda del livello considerato, che può essere micro, meso o macro (Kirchherr et al., 2017). Nel contesto imprenditoriale associato al livello meso, l'EC trova espressione attraverso meccanismi collaborativi come la SI e la creazione di eco-parchi. Gli eco-parchi rappresentano comunità di imprese impegnate nella salvaguardia ambientale e nella conservazione dell'ecosistema naturale tramite la condivisione responsabile delle risorse (Chertow, 2000; Refaat, 2014; Haskins, 2006). Nella creazione di tali comunità imprenditoriali e nei meccanismi di condivisione, emergono rapporti sinergici di co-dipendenza e fiducia reciproca, basati su un dialogo costante (Corsini et al., 2022; Walls & Paquin, 2015). In questo contesto, dove si manifesta un elevato rischio di complicazioni legate alla molteplicità di rapporti imprenditoriali e alla presenza di attori diversificati che collaborano, l'intermediario assume un ruolo di rilievo nel facilitare tali relazioni (Notarnicola et al., 2016; Patala et al., 2020; Henriques et al., 2021). Si impegna attivamente nella mitigazione di eventuali barriere, che possano essere di natura fisica o mentale, emergenti durante le interazioni (Patala et al., 2020). L'intermediario contribuisce inoltre al riconoscimento del valore delle risorse, apportando il know-how necessario alle imprese per identificare strategie e pratiche finalizzate al riutilizzo, al recupero e al riciclo di materiali e risorse che rischiano di essere trascurate (Kanda et al., 2018). Pertanto, l'intermediazione nella SI svolge un ruolo cruciale nel semplificare e facilitare i processi, creando condizioni ottimali per un'implementazione efficiente. "La

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SI facilitata richiede lo sforzo di intermediari che possono svolgere varie funzioni per accelerare nuove innovazioni per il riutilizzo dei materiali” (Patala et al., p.2). Tali sforzi di facilitazione si delineano principalmente nella fase iniziale dello sviluppo della SI, attraverso “azioni di conversazione”. Queste azioni mirano a preparare il terreno per la collaborazione presentando potenziali partner e identificando opportunità di scambio. La facilitazione coinvolge anche il nutrire e promuovere la cooperazione tra gli attori nella fase pre-sviluppo, creando connessioni tra potenziali partner. Tuttavia, la facilitazione è significativa anche nella fase successiva dello sviluppo, attraverso le “azioni di co-creazione” volte a sostenere lo sviluppo dell’infrastruttura di rete e gestire il flusso di risorse (Paquin & Howard-Grenville, 2012).

Obiettivo della ricerca. Il ruolo degli intermediari esercita una significativa influenza sullo sviluppo della SI, fungendo da catalizzatori chiave (Patala, 2020). La loro presenza è cruciale per mantenere l’equilibrio e favorire lo sviluppo della rete sin dai suoi primi stadi. In mancanza di intermediari, si presenta un ostacolo primario allo sviluppo della SI (Henriques, 2021). Questo scenario evidenzia l’importanza degli intermediari come attori strategici, che hanno il compito di sviluppare una strategia di collaborazione nell’ambito della SI, un aspetto che finora è stato poco esplorato. Senza il loro intervento, le aziende devono affrontare maggiori difficoltà nel collegarsi tra loro, sottolineando così il loro ruolo fondamentale non solo nel facilitare gli incontri tra i partner, ma anche nel coltivare e stabilire relazioni solide e durature. Attualmente, le ricerche sugli intermediari nella SI sono ancora limitate, ma rivelano un enorme potenziale in questo campo. Gli intermediari sono riconosciuti per il loro valore in una varietà di contesti, che spaziano dalla transizione alla gestione ecologica all’innovazione (Kivimaa, et al., 2020; Van Lente, 2003). Sebbene gli studi confermano il contributo degli intermediari alla SI (Paquin & Howard, 2012; Zaoual & Lecocq, 2018; Patala et al., 2020) e il loro ruolo nel promuovere la cooperazione e la rivalutazione dei rifiuti (Zaoual & Lecocq, 2018), c’è ancora molto da capire sull’impatto del loro intervento. Di conseguenza, l’obiettivo principale di questo articolo è indagare sull’impatto degli intermediari nella SI. Questa analisi mira a colmare il divario nella comprensione di come gli intermediari possano influenzare positivamente lo sviluppo e le dinamiche della SI.

Metodologia. L’obiettivo di questo studio è esplorare il ruolo degli intermediari e il loro impatto nello sviluppo della SI, valutando la loro influenza sulla rete. In particolare, si intende comprendere l’impatto dell’intermediario degli intermediari allo sviluppo della SI. Si considera l’analisi del caso di studio quale metodo più idoneo per conseguire l’obiettivo della ricerca, consentendo ai ricercatori di mantenere una visione reale e chiara degli eventi della vita reale, compresi i cicli di vita individuali, il comportamento di gruppi ristretti e i processi organizzativi e gestionali (Yin, 1981). Sebbene questa metodologia possa risultare complessa e articolata, consente di ottenere risultati accurati e affidabili (Voinea et al., 2019), con significato pratico poiché riflette situazioni reali e permette di esaminare vari aspetti (Cronin, 2014; Bartlett & Vavrus, 2016).

Il caso aziendale è stato scelto attraverso un processo di selezione basato su criteri, volto a definire il profilo del campione per la ricerca (Barringer & Greening, 1998; LeCompte and Preissle 1993; Patton 1990). Nello specifico, sono stati considerati tre aspetti: (1) l’azienda deve fungere da intermediario tra diverse aziende coinvolte in collaborazioni; (2) deve manifestare un impegno per la creazione di un impatto ambientale positivo; (3) deve avere un’influenza rilevante nel contesto imprenditoriale. L’azienda scelta è Regusto, fondata nel 2016 e opera come intermediario per prevenire sprechi e eccedenze nelle catene di approvvigionamento alimentare e non alimentare. È stata riconosciuta come una delle prime 10 start-up italiane più promettenti nel 2019 (Secondi et al., 2019; EU-startups, 2019). Attraverso una piattaforma digitale, Regusto facilita in tempo reale il collegamento tra offerta e domanda di prodotti a rischio di spreco, semplificando la gestione dell’inventario sia per organizzazioni a scopo di lucro che no-profit. In aggiunta, è stata condotta un’intervista con un’azienda della catena di approvvigionamento che ha utilizzato la piattaforma Regusto per lo smaltimento di prodotti o rifiuti industriali, destinandoli a organizzazioni del terzo settore. Per motivi di riservatezza, il nome dell’azienda è stato mantenuto anonimo e verrà quindi identificato nella ricerca come azienda A1. La raccolta di dati primari è avvenuta attraverso un modello di intervista semi-strutturato, una pratica ampiamente utilizzata nelle scienze sociali per la raccolta di dati (Bradford and Cullin, 2012; Jaeger & Upadhyay, 2020). Questo approccio è stato scelto per garantire che le risposte fossero allineate agli obiettivi dello studio, offrendo agli imprenditori uno spazio per condividere riflessioni personali (Barringer & Greening, 1998). L’utilizzo di interviste semi-strutturate mirava a migliorare la flessibilità e la completezza della ricerca, preservando la natura conversazionale del dialogo (Barringer & Greening, 1998). Sono stati applicati due modelli distinti di intervista semi-strutturata, adattati alla tipologia aziendale intervistata. Gli incontri si sono svolti attraverso Google Meet nel mese di febbraio 2024, con una durata media di circa un’ora. Per garantire coerenza e uniformità nel processo di analisi, tutte le interviste sono state trascritte (Jaeger & Upadhyay, 2020). Per ragioni di riservatezza, le trascrizioni dell’intervista di A1 sono state trattate in forma anonima.

Per analizzare i dati, abbiamo adottato un approccio induttivo, una metodologia qualitativa che si basa sull’interpretazione approfondita dei dati grezzi per identificare concetti, temi e modelli emergenti (Strauss and Corbin, 1998). Questo metodo consente alle teorie di svilupparsi organicamente dai dati, senza essere vincolate da metodologie strutturate o preconcetti predefiniti. Il processo di codifica è stato suddiviso in cinque fasi. Nella prima fase, nota come “pulizia dei dati”, abbiamo organizzato i dati grezzi per ciascuna intervista. Successivamente, abbiamo condotto un’analisi dettagliata del testo e dei temi correlati per ottenere una visione chiara del caso. La terza fase si è concentrata sull’identificazione e sulla creazione di categorie superiori o generali e categorie inferiori o specifiche, utilizzando un processo deduttivo nell’analisi del testo. La fase successiva ha coinvolto una “codifica sovrapposta” del testo, prendendo in considerazione solo le parti rilevanti per gli obiettivi della ricerca. Nell’ultima fase, abbiamo individuato eventuali sotto-temi in ogni categoria, derivanti da intuizioni recenti, combinando categorie in base a somiglianze (Thomas, 2006).

Risultati preliminari e discussione. Dall’analisi delle interviste, emergono due macro temi di interessante rilievo, i quali sono stati suddivisi nei due sottoparagrafi successivi denominati.

3.1. L'intermediario e la sua relazione

Nel contesto della SI, le aziende collaborano per ottimizzare l'uso delle risorse, con l'obiettivo di ridurre gli sprechi e utilizzare efficacemente i materiali (Chertow, 2000; Chertow, 2007). Questa strategia richiede una gestione complessa delle relazioni tra le imprese, che può essere difficile da orchestrare e gestire, rendendo necessarie azioni di facilitazione per il loro sviluppo (Patala et al., 2020). L'intermediazione nella SI svolge un ruolo cruciale nel semplificare e facilitare i processi, creando condizioni ottimali per un'implementazione efficiente. Come eco-innovatori, gli intermediari agiscono anche come broker, plasmando attivamente la collaborazione, organizzando contenuti, stabilendo regole, obiettivi e priorità e delineando progetti per l'implementazione. Agiscono anche come mediator, facilitando l'introduzione di nuovi collaboratori, proteggendo gli interessi degli utenti, promuovendo il loro riconoscimento e protezione e migliorando la comprensione relazionale e cognitiva (Howells, 2006; Stadler & Probst, 2012; Kanda, 2018). Nel loro ruolo di broker, intervengono in vari modi, ad esempio agendo come convener nella collaborazione, migliorando la comprensione relazionale o agendo come learning catalyst, condividendo la loro esperienza attraverso la ricerca e lo sviluppo e promuovendo e distribuendo conoscenze, intuizioni e informazioni all'interno della rete (Stadler & Probst, 2012).

Nel caso dell'azienda A1, il contributo di Regusto come intermediario è stato fondamentale nel lancio del progetto di sostenibilità. Senza la sua presenza e il suo sostegno, l'azienda A1, avrebbe avuto maggiori difficoltà nell'avviare il progetto. Questo dimostra non solo l'importanza degli intermediari nel promuovere iniziative di sostenibilità e facilitare la collaborazione tra le organizzazioni, ma anche il loro ruolo di catalizzatori nella creazione di opportunità e iniziative altrimenti difficili da realizzare per le singole aziende:

“Ci avevamo provato ma le realtà del terzo settore sono talmente frammentate, con tante difficoltà, che magari c'era una con cui funzionava, ma poi con le altre c'erano difficoltà. Quindi, lo si faceva una o due volte ma poi alla terza volta si faceva prima a buttarlo. Per quello che ti dico che è stato da subito concreto e semplice. È stato geniale” (Coordinatore Sviluppo Sostenibile, A1).

Pertanto, definire Regusto esclusivamente come un facilitatore potrebbe risultare riduttivo, poiché egli è stato un promotore dell'opportunità stessa. Il valore di Regusto si manifesta nel fatto che non solo ha contribuito a creare valore, ma ha anche suscitato e alimentato la motivazione necessaria per sostenere il progetto nel tempo. Ha stimolato e incoraggiato l'entusiasmo affinché il progetto potesse progredire e avere successo. In questo senso, il suo ruolo va oltre quello di un semplice facilitatore, poiché ha giocato un ruolo attivo nel promuovere e sostenere l'iniziativa di sostenibilità: “Senza di noi, molte aziende probabilmente non avrebbero iniziato o continuato le loro attività sostenibili. Il caso di A1 è emblematico, poiché all'inizio recuperavano saltuariamente qualcosa, coinvolgendo circa 10 enti no profit. Oggi ne coinvolgono 150 e il loro obiettivo è raggiungere il 10% dei prodotti recuperati, pari a 5000 tonnellate in un anno. Senza il nostro intervento, probabilmente non avrebbero raggiunto questo obiettivo con tempi e modalità diverse.” (CEO di Regusto)

Ciò trova anche conferma nella relazione tra i due attori. Nella collaborazione tra una o più organizzazioni o aziende, coltivare una solida relazione di fiducia è fondamentale. La fiducia facilita la cooperazione attuale e futura, poiché le aziende sviluppano una reciproca affidabilità, confidando con sicurezza che gli impegni saranno rispettati e gli interessi saranno preservati (Zhang et al., 2011). La relazione tra intermediario ed attore delineata si distingue in modo significativo. Tale forma di relazione risulta ancora più particolare perché le sue intenzioni si sviluppano sulla base di una compatibilità percepita da entrambe le parti (Hakanen et al., 2016). In questo contesto, la fiducia assume una dimensione unica, evolvendo oltre la mera percezione di una relazione potenzialmente fruttuosa per crescere in modo sostanziale grazie a una comprensione condivisa di obiettivi e valori: “Io non so se chiamarla fiducia. Direi unione di valori in modalità cooperativa, sintonia (...)” (Coordinatore Sviluppo Sostenibile, A1).

3.2. Cambiamento culturale

La Strategia Mondiale per la Conservazione (1991) ha identificato tra i nove principi di una società sostenibile il cambiamento di atteggiamento e pratiche. Tale principio, traducibile nella diffusione di una cultura sostenibile, parte dall'assunzione che il perseguimento della sostenibilità richiede un'educazione culturale incentrata su di essa. Questo implica la diffusione di abitudini e norme comportamentali, nonché la promozione di principi e mentalità orientati verso la sostenibilità (Robin & Poon, 2009). “La cultura è una condizione per l'azione (...), e si riferisce alla civiltà”. Da ciò emerge una concezione della cultura come motore di un potere sociale, economico e politico collettivo, comune a tutti poiché necessario a tutti: attraverso la cultura, gli individui conferiscono significato a sé stessi, agli altri e all'ambiente sociale in cui si trovano. La cultura costituisce lo strumento attraverso cui si attribuisce valore e senso a una condotta, a un principio, a una pratica sociale, economica o politica (Horlings, 2015, p. 163). Questo concetto trova conferma anche nelle osservazioni fatte dal CEO di Regusto:

“La sfida consiste nel far crescere la cultura in questo ambito, sia a livello aziendale che istituzionale” (Founder di Regusto). “Questa iniziativa conferma ciò che stiamo facendo per il Ministero, dimostrando che il monitoraggio degli impatti ambientali, e anche sociali, lungo la filiera agroalimentare e non, è diventato un elemento strategico per istituzioni come il Ministero della Transizione Ecologica ed Enea. Questo conferma che ciò che stiamo facendo è qualcosa di innovativo e necessario a livello ambientale e sociale”.

In questo processo, un ruolo fondamentale è svolto rispettivamente dalle istituzioni sovranazionali, nazionali e locali, dalle organizzazioni non governative, dalle aziende e, più in generale, dalla società civile. Ciascuna di queste ha motivazioni diverse residenti, rispettivamente, nel desiderio di soddisfare le esigenze e i bisogni dei cittadini, nella volontà di perseguire ideali e valori personali, nella ricerca di profitto o nell'adesione a valori comunitari (Gardner, 2001). Nonostante le ragioni possano essere diverse, il progetto è comune a tutti. La transizione verso la sostenibilità può essere attuata attraverso una governance attiva, ove i governi lavorano in collaborazione con gli attori della società civile, ispirati da progetti chiari come l'agenda 21 per la sostenibilità (Evans et al., 2013). La cultura sostenibile nel suo processo può essere scomposta in quattro aspetti quali consapevolezza, intesa come la comprensione che risulta necessario cambiare quella situazione, la preoccupazione intesa come l'ansia derivante da quella situazione, motivazione - ciò che sollecita a migliorare e ad agire ed infine l'attuazione, intesa come il risultato del disagio e di quella preoccupazione sfociante in un effettivo comportamento (Robin&Poon, 2009). Nel processo di creazione di una cultura, vengono influenzati sia l'insieme di valori e tradizioni locali che le sovrastrutture identitarie, insieme alle dinamiche e ai processi che caratterizzano lo sviluppo regionale, guidati dalla volontà collettiva umana e che si estendono al di là dei confini geografici o amministrativi (Horlings, 2015):

“L'azienda AI non può essere considerata omogenea a livello di valori. Le pratiche di sostenibilità sono più diffuse nei paesi europei dove il volontariato è ampiamente praticato, rispetto ad altri contesti caratterizzati da una minore sensibilità verso gli altri”.

Limitazioni della ricerca. Come tutte le ricerche in ambito accademico, anche il presente studio presenta delle limitazioni. In primo luogo, è stata condotta un'analisi basata su un solo caso di studio, quale Regusto, per esaminare l'impatto dell'intermediario nel processo di SI. In secondo luogo, è stata intervistato soltanto una sola azienda, ossia Azienda AI interagente con Regusto per valutare l'impatto dell'intermediario nel processo di SI. Il lavoro futuro prevede di condurre interviste successive con ulteriori casi coinvolti nel processo di SI interagenti con Regusto, al fine da effettuare un'analisi più approfondita. Inoltre, si intende condurre un'indagine su altri intermediari, e relative aziende coinvolte nella SI, implicati nel processo di implementazione della SI.

Implicazioni manageriali. Il presente studio si distingue per la sua analisi dell'impatto degli intermediari nel contesto dello sviluppo della SI. Le sue conclusioni offrono un contributo significativo alla comunità accademica e ai responsabili delle politiche, nonché ai dirigenti aziendali futuri, che cercano di comprendere meglio l'implementazione della IS e i meccanismi chiave che facilitano questo processo. In particolare, questa ricerca fornisce una prospettiva approfondita sul ruolo cruciale degli intermediari e sulla loro influenza nel rendere più efficiente e veloce l'adozione dei sistemi informativi. Si ritiene che la disseminazione dei risultati di questo studio possa accelerare l'identificazione degli intermediari, migliorare la comprensione del loro impatto sul mercato e, soprattutto, evidenziare come possano facilitare la transizione verso pratiche eco-innovative.

Originalità della ricerca. Il presente studio si focalizza sull'analisi del ruolo dell'intermediario nel contesto della SI, esaminando l'impatto che esso ha sullo sviluppo di questa strategia. La sua originalità risiede in due principali aspetti. Primo, sebbene gli intermediari siano riconosciuti come attori fondamentali nei processi di transizione ecologica e di innovazione manageriale, il loro ruolo nei contesti di SI è stato poco esplorato, nonostante la crescente considerazione di questa strategia come cruciale per la transizione verso processi produttivi più sostenibili. Secondo, i risultati della ricerca non solo confermano chiaramente l'importanza dell'intermediario come elemento chiave, ma anche evidenziano il suo ruolo come promotore di cambiamento culturale e promotore di eco-innovazione.

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L'industria del calcio tra sostenibilità finanziaria e nuove dimensioni tecnologiche

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Abstract

I club di calcio europei sono interessati da una profonda trasformazione in quanto sollecitati dalla continua evoluzione che sta caratterizzando l'industria del calcio; i club nel tentativo di garantire la sostenibilità finanziaria adottano innovazioni anche attraverso il ricorso alle tecnologie digitali. In passato, i club hanno sempre attuato strategie finanziarie legate a sponsorizzazioni, vendite di biglietti e diritti televisivi; recentemente i cambiamenti normativi ed economici, nonché l'avvento sempre più dirompente della tecnologia e della transizione digitale favoriscono l'esplorazione di nuove vie di sostenibilità finanziaria. Difatti, con l'avvento della digitalizzazione, i club calcistici utilizzano nuove tecnologie quali la blockchain, i Fan Token e i Token Non Fungibili (NFT), i canali Over-The-Top (OTT). La ricerca ha inteso esaminare un campione di club considerati un esempio di diversificazione e sostenibilità finanziaria innovativa. Sono in atto analisi tese ad esplorare le più significative e proficue strategie finanziarie innovative implementate dai club di calcio europei più virtuosi, che integrano le proprie strategie finanziarie attraverso l'utilizzo dell'informatica, della digitalizzazione e dei social. Dall'analisi emerge un nuovo comportamento che lascia immaginare l'identificazione di nuovi spazi competitivi per l'industria del football, basati su nuovi contents digitali in grado di garantire maggiore stabilità finanziaria mediante una costante diversificazione strategica delle fonti di reddito.

Key words: digitalizzazione, OTT, token, blockchain, social media, tecnologia, diversificazione, sostenibilità finanziaria.

Inquadramento della ricerca. *Il lavoro approfondisce e descrive una ricerca che gli Autori stanno svolgendo su un campione di club di calcio europei (Top Club europee) che hanno di recente implementato strategie innovative, aprendosi alla trasformazione digitale ed al marketing innovativo per incrementare i propri ricavi.*

In passato, le tradizionali fonti di reddito delle imprese calcistiche europee erano sufficienti a sostenere la loro crescita. Tra queste fonti, le più diffuse e collaudate includevano sponsorizzazioni, vendite di biglietti e, successivamente, diritti televisivi. Su queste fonti di reddito è stato costruito essenzialmente il successo finanziario dei club europei.

Le sponsorizzazioni sono state, per anni, una pietra miliare delle entrate per i club sin dall'inizio del calcio professionistico. La natura reciprocamente vantaggiosa delle sponsorizzazioni ha avuto un profondo impatto sulla stabilità finanziaria e sulla crescita delle organizzazioni calcistiche. I club stipulano varie forme di accordi di sponsorizzazione, che comprendono sponsorizzazioni di maglie, diritti di denominazione degli stadi e endorsement. I diritti di denominazione degli stadi, d'altra parte, prevedono che il nome di uno sponsor venga affisso al terreno di casa del club. Questi accordi sono particolarmente preziosi perché creano un collegamento duraturo tra lo sponsor e il club, (Bull e Whittam, 2021), con evidenti impatti sulla visibilità globale dei club.

Le vendite di biglietti rappresentano il collegamento per antonomasia tra club di calcio e tifoseria. L'esperienza di assistere alle partite di persona è impagabile, costituendo una parte integrante della cultura dello sport. Quest'ultimi rappresentano una componente vitale dell'identità di un club. I tifosi sono il cuore pulsante del club, alimentando la lealtà e l'impegno duraturo. Questo coinvolgimento rafforza il ruolo del club come istituzione comunitaria.

I diritti televisivi, infine, hanno rivoluzionato il panorama finanziario dei club di calcio. La vendita dei diritti di trasmissione a reti televisive e piattaforme di streaming ha introdotto ricavi senza precedenti e ha elevato l'attrattiva globale del fenomeno del calcio professionistico. Le partite trasmesse superano i confini geografici, consentendo ai club di costruire una base di tifosi in tutto il mondo. Occorre sottolineare, inoltre, che i diritti televisivi contribuiscono all'equilibrio competitivo nello sport, poiché i ricavi generati dagli accordi di trasmissione sono distribuiti tra i club, garantendo che anche i club più piccoli ricevano una quota delle entrate.

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Queste fonti di reddito tradizionali hanno fornito, fino a poco tempo fa, i mezzi finanziari affinché i club potessero operare⁵. Tuttavia, ciò che ha spinto le imprese calcistiche a cercare nuove e più proficue fonti di reddito è stata l'evoluzione normativa europea, sul fairplay finanziario (SPF); questa pressione normativo-istituzionale non ha più permesso, né tollerato, l'esistenza di squilibri di bilancio e plusvalenze fittizie dei giocatori determinati dalla necessità di indebitarsi oltre misura per competere sportivamente, ottenendo, quindi, nel breve periodo, un saldo attivo consistente in un ritorno economico falso, non reale, incapace di sostenere nel lungo periodo la capacità finanziaria dell'impresa (Antognozzi S., 2022).

Com'è noto, il ricorso al disavanzo di bilancio per finanziarsi è nato soprattutto come effetto della sentenza Bosman⁶, che sancì la libera circolazione dei lavoratori all'interno dell'Unione Europea, consentendo il trasferimento dei calciatori professionisti ad altra società, al termine del contratto, senza nulla dovere alla società di provenienza. Per sopperire ai danni economici alle società calcistiche, la UEFA introdusse, nel 2004, le c.d. Licenze Uefa⁷. Nel 2009 il Comitato esecutivo della Uefa emanò il Financial Fair Play Concept, un corpus di regole obbligatorie per le squadre partecipanti alle competizioni europee, integrato, nel 2023, dal nuovo "Regolamento Uefa sulle licenze per club e la sostenibilità finanziaria". Tale normativa perseguì l'obiettivo di stabilire dei requisiti di pareggio del bilancio societario e di favorire la stabilità finanziaria dei club.

Di conseguenza, la ricerca di nuove entrate finanziarie necessarie per conformarsi ai vincoli normativi UE ha favorito un'evoluzione delle strategie di finanziamento dei club europei, sempre più interessate alle opportunità generate in campo finanziario dall'innovazione tecnologica: ad esempio, la trasformazione degli stadi di proprietà in beni multifunzionali in grado di generare reddito durante tutto l'anno (Werlayne et al., 2023; Edensor et al., 2021), oppure la valorizzazione economica del marchio del club, della sua storia monetizzata attraverso la vendita di diritti multimediali e la creazione di contenuti multimediali. Il merchandising è divenuto, quindi, una fonte sempre più potente di reddito, includendo più prodotti (videogame, maglie, scarpe, ect.) (Söderman e Dolles, 2013) con il vantaggio di poter raggiungere clienti in tutto il mondo sfruttando la brand reputation del club e dei suoi players (Uva, 2023; Yiapanas et al., 2023).

La competizione per una maggiore quota di mercato porta i club a "scommettere" gli asset aziendali per il successo futuro, rendendo l'industria calcistica finanziariamente instabile (Lago et al., 2006; Renzi, Taragoni, 2023, 115 ss.). In risposta a tali tendenze emergenti, la UEFA è intervenuta con il regolamento sul Fair Play Finanziario (FPF) per migliorare la salute finanziaria dei club europei.

In tale contesto, le imprese calcistiche hanno iniziato a ricercare nuove fonti di reddito immediato, individuando nuovi percorsi di investimento sostenibile tali da generare entrate finanziarie sempre più cospicue e proficue (Esposito De Falco, 2023, 5-6). Questa incessante ricerca della prosperità finanziaria ha modellato l'evoluzione delle strategie di sostenibilità finanziaria, seguendo i cambiamenti della dinamica di mercato e i progressi tecnologici. L'industria calcistica moderna si è dunque evoluta, da semplice fenomeno sportivo a sistema imprenditoriale e decisionale poliedrico e flessibile, capace di ricorrere a strategie tecnologicamente innovative di investimento finanziario volte a superare la dipendenza da fonti tradizionali di reddito (sponsorizzazioni, vendite di biglietti e diritti televisivi) non più sufficienti a garantire la stabilità finanziaria a lungo termine (Memari et al., 2021; Cayolla et al., 2023).

I club di calcio hanno così intrapreso una straordinaria diversificazione finanziaria, che comprende lo sfruttamento commerciale dei social media, l'ascesa delle piattaforme OTT (Over The Top), l'utilizzo di innovative fonti reddituali di entrata che si aprono al commercio digitale sfruttando token e blockchain e coinvolgendo i tifosi in piattaforme virtuali ed immersive di fruizione del servizio calcistico (UEFA, 2024; Deloitte, 2023; FIGC, PWC, 2024).

Con l'ascesa di internet e dei social media, i club hanno iniziato a esplorare ulteriori vie per distribuire i contents, lanciando siti web ufficiali, app e piattaforme di streaming (Fenton et al., 2023); si pensi, ad es., al programma E-Foot FIGC 2020-2022, con oltre 17.000 iscrizioni alla selezione delle e-Nazionali, una community di 82.319 utenti (+719% vs 2020) e 2,4 milioni di visualizzazioni, 1,6 milioni di utenti unici dei 50 live streaming su twitch. Su questa scia, anche le squadre di club italiane stanno adottando strategie simili spostando l'attenzione sui social media e sulle nuove tecnologie digitali (fig. 1).

⁵ Cfr. Bouchet, Troilo and Urban, 2020; Giudice F., 2020.

⁶ La sentenza ha il nome del calciatore belga che ricorse alla Corte di Giustizia della Comunità Europea per vedersi riconosciuta la possibilità di trasferirsi allo scadere del contratto con la propria società senza possibilità, da parte di quest'ultima, di chiedere un indennizzo economico. Cfr Dièz, Martinèz Sanchez (1996), 469 s.

⁷ Ogni club deve rispettare i principi contabili della propria legislazione e per le società quotate vige l'obbligo di redigere il bilancio facendo riferimento ai principi contabili internazionali IAS/IFRS. Lo scopo principale è stato quello di rafforzare la trasparenza delle operazioni economiche e finanziarie dei clubs al fine di rendere il sistema più stabile ed il relativo mercato più attrattivo per gli investitori. Cfr. G. Tortorano, 2017, 67 s.

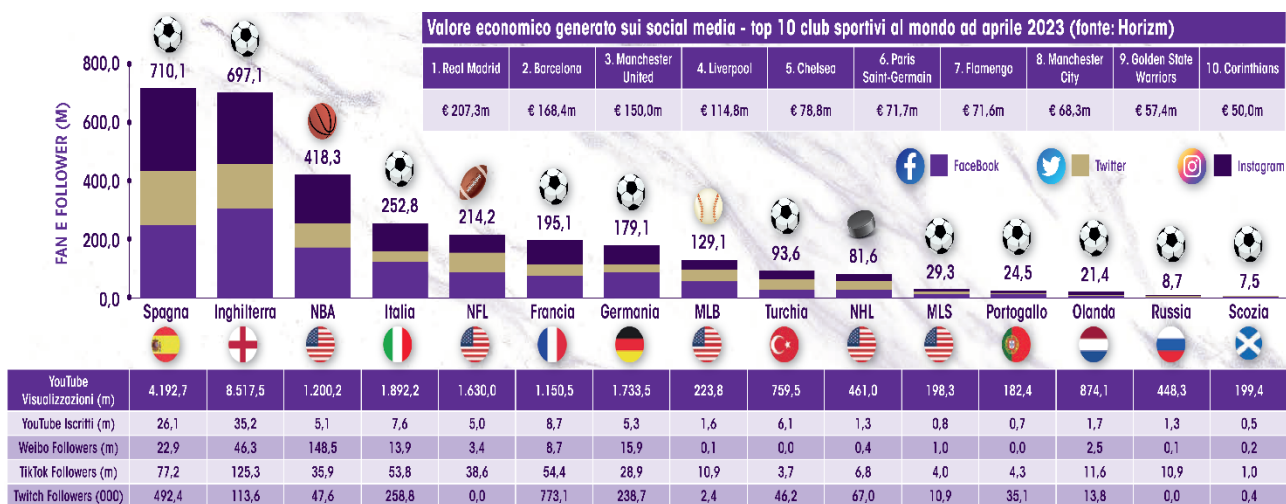
Fig. 1 - Profilo social delle società di calcio professionistico

Squadre Analizzate	Facebook Follower	Twitter Follower	Instagram Follower	TOTALE	YouTube Visualizzazioni
Serie A	121,3 M	37,2 M	94,3 M	252,8 M	1.892,2 M
Serie B	2,4 M	1,2 M	2,7 M	6,3 M	53,0 M
Serie C	1,4 M	0,3 M	1,0 M	2,7 M	42,6 M
TOTALE	125,1 M	38,7 M	98,0 M	261,8 M	1.987,8 M

Fonte: da noi riadattata da FIGC, PwC, 2024

Un confronto sui fan e follower totali sui social media dei club calcistici italiani professionistici evidenzia un chiarissimo incremento dalle 127,4 mln di visualizzazioni sui siti dei club del 2017 ai 261,8 del 2022 ai 499,2 mln di visualizzazioni su YouTube del 2017 ai 1.987,8 del 2022 (FIGC, PwC 2024, 103). In merito alla brand reputation dei club italiani è stata condotta una ricerca in cui sono state raccolte, dai social network, circa 2,5 milioni di conversazioni da parte di circa 1,3 milioni di utenti in tutta Italia, riguardanti il calcio italiano, per comprendere come gli utenti percepiscono il mondo del calcio e le possibili opportunità di crescita e miglioramento dell'immagine di questo sport. Dall'analisi è emerso un sentiment nel complesso positivo (51%), soprattutto se confrontato con la media degli altri settori. Emerge inoltre una crescita del 6% nella percentuale di donne che discutono di calcio⁸. Per comprendere l'interesse generato dal calcio nel mondo, basta ricordare che, sui social network, il calcio intercetta l'interesse di circa il 40% degli abitanti del pianeta⁹.

Fig. 2 – L'importanza del profilo social del calcio mondiale (confronto con lo sport professionistico Nord Americano)



Fonte: FIGC, PwC, 2024, 162

I social media sono diventati, quindi, uno strumento fondamentale nelle strategie di reddito dei club di calcio (Glebova et al., 2023). Piattaforme come Facebook, Twitter e Instagram offrono ai club la possibilità di interagire con i tifosi, promuovere il merchandising e assicurarsi accordi di sponsorizzazione lucrativi. Ciò vale, in generale, anche in riferimento alla trasformazione digitale della fruizione dei contents calcistici¹⁰, per cui la transizione dalla Linear TV al consumo digitale mostra una crescita nell'utilizzo di strumenti digitali (Over-The-Top e streaming) per seguire gli eventi

⁸ Per la Serie A i picchi di conversazioni riguardano fine agosto - inizio settembre 2022 e fine gennaio 2023, in corrispondenza della chiusura del mercato estivo ed invernale, quando i "colpi di mercato" delle società provocano un aumento delle reaction e delle conversazioni degli utenti sui social. Le regioni più coinvolte sono state Lombardia, Lazio e Campania (FIGC, PwC, 2024, 105).

⁹ I club partecipanti alle 5 Top League calcistiche europee (Inghilterra, Spagna, Italia, Francia e Germania) presentano un numero aggregato di fan e follower sui principali social media (Facebook, Twitter, Instagram e TikTok) pari a circa 2,4 miliardi, con oltre 17 miliardi di visualizzazioni su YouTube, mentre le franchigie partecipanti alle top league del Nord America (NFL, MLB, NBA, NHL e MLS) si fermano rispettivamente a 1,0 miliardi e a 3,7 miliardi. La persona con più fan e follower a livello mondiale è il calciatore Cristiano Ronaldo (820 milioni nel gennaio 2023); in base alle stime di Nielsen, in media ogni post su Instagram del campione portoghese produce un Social Media Value pari a quasi 3,6 milioni di dollari (dato che rappresenta il valore mediatico derivante dall'esposizione del logo che un marchio ottiene quando collabora con un influencer come CR7), (UEFA, 2024, 147).

¹⁰ La creazione di contents multimediali prodotti e distribuiti in modo indipendente dai club, consente loro di acquisire il controllo sulla narrazione, rafforzando i legami socio-emozionali con i tifosi. Questo cambiamento ha portato a un'esperienza più coinvolgente per i tifosi, offrendo l'accesso ad interviste esclusive e contenuti personalizzati (Lefebvre et al., 2023; Rowe, 2015).

sportivi rispetto alla tv lineare (Free To Air e Pay TV): infatti il 41% degli appassionati di sport a livello mondiale segue gli eventi sportivi in streaming tramite OTT, social media o altre piattaforme digitali¹¹.

Tra il 2017 e il 2022 i club partecipanti alle 10 Top League calcistiche europee con una divisione di e-sports sono più che raddoppiati (da 67 a 143), mentre nello sport professionistico del Nord America (NBA, NFL, MLB e NHL) sono aumentati del 132% (da 50 a 116) (FIGC, 2024, 164). Secondo dati dell'Osservatorio di E&Y, inoltre, nel gennaio 2022 si contano 32,8 milioni di utenti delle piattaforme OTT (pay e free), in aumento rispetto ai 28,7 del gennaio 2020; nello stesso periodo, il numero di abbonamenti è aumentato da 8,5 a 14,5 milioni, gli utenti pay da 13,8 a 17,8 milioni e i sottoscrittori unici paganti da 6,1 a 7,9 milioni. Considerando i 5 principali mercati televisivi europei, i servizi OTT in streaming nel 2022 sono responsabili per il 20% di tutta la spesa in diritti tv sportivi (dato in crescita rispetto al 12% del 2021). L'Italia è in testa a questa classifica, con un'incidenza pari al 53% (grazie in particolare all'accordo tra DAZN e Lega Serie A); seguono Germania (32%), Spagna (16%), Francia (14%) e Inghilterra (2%). In particolare, il valore dei diritti media sportivi domestici acquisiti da OTT è cresciuto dal 4% al 23% nelle 5 Top League calcistiche europee negli ultimi 2 anni e dal 5% del 2018 al 23% del 2021 per la Uefa Champions League nei 5 mercati top (Inghilterra, Germania, Spagna, Italia e Francia), mentre in Sud America l'incidenza degli investimenti degli OTT per i diritti media della Copa Libertadores è passata dallo 0% del 2018 al 30% del 2022. A livello globale (dati 2021), la generazione z (9-24 anni) rappresenta il cluster maggiormente interessato allo sport (60%), davanti ai Millennials (25-40 anni) con il 55%, alla Generazione X (41-56 anni) con il 49% e al segmento Boomers (57-75 anni) con il 47%. Le generazioni più giovani sono allo stesso tempo quelle che utilizzano maggiormente gli OTT e i social media per seguire gli eventi sportivi (FIGC, PwC, 2024).

I club di calcio si sono anche avventurati nel Metaverso, un universo virtuale dove i tifosi possono interagire con il club in modi inediti¹² (Hongyi et al., 2022). L'immersività sta diventando un elemento imprescindibile nello sviluppo dell'intrattenimento sportivo: si calcola che il mercato dei dispositivi per la fruizione dei contenuti sportivi in realtà aumentata e realtà virtuale raggiungerà i \$ 7,5 mld entro il 2026 (IQUII Sport, 2023). Attraverso esperienze di realtà virtuale (VR), i tifosi possono partecipare alle partite, esplorare la storia del club e impegnarsi in attività uniche, aprendo nuovi canali di entrate. Alcuni club hanno persino introdotto collezionabili NFT (Token Non Fungibili) nel Metaverso (Baker et al., 2022; Romero-Jara et al., 2023).

Cripto-attivi e Fan Token sono emersi come elementi rivoluzionari nelle entrate 4.0, rivoluzionando l'engagement dei tifosi e la sostenibilità finanziaria¹³. I club di calcio hanno riconosciuto il potenziale delle criptovalute e della tecnologia blockchain. Gli NFT (Non-Fungible Token) ovvero oggetti da collezione digitali e carte collezionabili, negli ultimi anni stanno rappresentando una significativa opportunità anche per organizzazioni sportive, club e atleti, in termini di sviluppo di iniziative per la valorizzazione degli asset commerciali e del fan engagement. In particolare, sono ben 45 i club calcistici europei e 78 franchigie dello sport professionistico del Nord America che hanno avviato progetti, attività, sponsorizzazioni e collaborazioni in ambito NFT. Le Organizzazioni sportive a livello mondiale che hanno lanciato un Fan Token o hanno stretto accordi con aziende del settore (Socios, Binance e Bitci), al 2023, sono ben 122 nel calcio (contro 28 nel basket mondiale, 14 nel football americano, ect.).

Fig. 3 – I Fan Token nello Sport



Fonte: da noi riadattata da FIGC, PwC, 2024

¹¹ la percentuale media di tifosi di calcio che utilizzano i social media mentre guardano una partita di calcio è pari all'81%, e raggiunge addirittura il 90% in Cina, l'88% in Brasile, l'82% in India e negli Stati Uniti, il 77% in Spagna e supera il 60% in Australia, Francia, Italia, Regno Unito, Germania e Corea del Sud.

¹² 17 CLUB calcistici europei stanno sviluppando progetti utilizzando il Metaverso. Un esempio è IQUII Sport, la Business Unit di IQUII nata per supportare federazioni, club, atleti nel processo di trasformazione digitale orientata al potenziamento del business e per affiancare brand e investitori nel processo di valorizzazione delle partnership (<https://sport.iquii.com>).

¹³ All'interno del più ampio settore dei cryptoasset, i fan token rappresentano asset digitali che permettono ai possessori di prendere parte ai processi decisionali delle organizzazioni sportive esprimendo le proprie preferenze in sondaggi vincolanti (ad esempio per selezionare il design delle divise, i numeri di maglia, realizzare messaggi motivazionali e molto altro), con sconti esclusivi e la possibilità di guadagnare premi e ricompense attraverso giochi, concorsi e altre funzionalità.

Nonostante la recente crisi del mercato delle criptovalute (secondo alcune stime il valore del mercato è diminuito a livello globale per circa 1.800 miliardi di dollari tra la fine del 2021 e l'inizio del 2023), rimane significativo l'investimento nello sport da parte dei soggetti operanti nel settore dei cryptoasset (ad esempio NFT, criptovalute, blockchain e fan token), con sponsorizzazioni, accordi commerciali e sviluppo di piattaforme e iniziative di fan engagement. Alcuni club si sono avventurati nel mondo dei crypto-attivi investendo o accettando criptovalute per merchandising e biglietti (Naraine, 2019).

I Fan Token sono diventati un pilastro dell'engagement dei tifosi. I club emettono questi token su piattaforme blockchain, consentendo ai tifosi di influenzare le decisioni del club e accedere a contenuti ed esperienze esclusivi (Stegman et al., 2023). La vendita di Fan Token genera entrate e rafforza il legame emotivo tra club e tifosi. Alcuni club hanno sfruttato i Fan Token per dare ai tifosi una voce nella selezione delle playlist delle partite, nella scelta dei design delle maglie o persino nel votare per iniziative di beneficenza, facendo sentire i tifosi veramente connessi al processo decisionale del club. In definitiva, la rivoluzione delle entrate 4.0 nel calcio sottolinea l'adattabilità del settore nell'abbracciare nuove tecnologie e fonti di reddito innovative.

Finalità del paper. *Nell'approfondire le strategie di investimento innovative delle squadre di calcio, si vuole verificare la validità e l'efficacia delle scelte individuate e la loro diffusione all'intero settore, sia nazionale, sia europeo.*

Metodologia. *Questa ricerca è stata sviluppata seguendo il metodo dei casi (Yin, 1984), volto a esemplificare un obiettivo o delle finalità di ricerca attraverso la rappresentazione di casi aziendali corrispondenti alla domanda di ricerca che si intende perseguire.*

Nello specifico, la domanda di ricerca di questo lavoro, focalizzandosi sulle fonti di finanziamento delle imprese calcistiche, è la seguente:

“Le strategie di sostenibilità finanziaria nel settore calcistico europeo sono interessate dall'evoluzione tecnologica in atto? La transizione digitale può favorire il raggiungimento di una sostenibilità finanziaria per le imprese del calcio?”

Partendo da questa domanda di ricerca, si è ritenuto più opportuno ricorrere alla metodologia dei casi, definendo e selezionando venti top club europei (nazionali e internazionali) allo scopo di descriverne l'evoluzione verso fonti tecnologicamente innovative di reddito (OTT, token, multiverso, profilazione social, brand reputation, ect.).

La ricerca condotta non è ancora terminata. Tuttavia, ha comportato la costruzione di un campione qualitativo e selezionato di club europei da analizzare. Per restringere il campo, sono state considerate le cinque leghe principali: Premier League inglese, Serie A italiana, Liga spagnola, Bundesliga tedesca e Ligue 1 francese. All'interno di queste leghe, sono stati selezionati i 4 principali club. Per ogni club sono stati analizzati le fonti di reddito più innovative, dai siti web, al livello di digitalizzazione comunicazionale e di brand marketing, dalle fonti innovative di reddito (OTT, token, social, ect.) alla capacità delle nuove tecnologie di aumentare l'engagement dei tifosi, lungo un arco temporale riguardante gli ultimi tre anni finanziari (2020/21; 2021/22; 2022/23) (Ace Advisory, 2023; Mullin et al., 2014). La Tabella 1 riassume il campione analizzato, che è stato costruito sulla base delle informazioni desumibili da una research web condotta anche presso i siti dei principali club europei. Nel campione sono stati inseriti quei club che fornivano maggiori informazioni di dettagli circa l'utilizzo delle nuove tecnologie a supporto della formazione del reddito d'esercizio.

Tab. 1: L'elenco del campione di club europei analizzati

Club	Paese	Lega	Sito Web
Manchester City FC	Inghilterra	Premier League	https://www.mancity.com/
Liverpool FC	Inghilterra	Premier League	https://www.liverpoolfc.com/
Chelsea FC	Inghilterra	Premier League	https://www.chelseafc.com/en
Arsenal FC	Inghilterra	Premier League	https://www.arsenal.com/
Paris Saint Germain	Francia	Ligue 1	https://en.psg.fr/
Olympique de Marseille	Francia	Ligue 1	https://www.om.fr/fr
Olympique Gymnaste Club de Nice Côte d'Azur	Francia	Ligue 1	https://www.ogcnice.com/en/
LOSC Lille	Francia	Ligue 1	https://www.losc.fr/
FC Barcelona	Spagna	Liga	https://www.fcbarcelona.com/en/
Real Madrid Club de Fútbol	Spagna	Liga	https://www.realmadrid.com/en-US
Valencia Club de Fútbol	Spagna	Liga	https://www.valenciacf.com/home
Club Atletico de Madrid	Spagna	Liga	https://en.atleticodemadrid.com/
SSC Napoli	Italia	Serie A	https://sscnapoli.it/
F.C. Internazionale Milano	Italia	Serie A	https://www.inter.it/it
Juventus FC	Italia	Serie A	https://www.juventus.com/en
AC Milan	Italia	Serie A	https://www.acmilan.com/en
BVB Borussia Dortmund	Germania	Bundesliga	https://www.bvb.de/eng
Fußball-Club Bayern München AG	Germania	Bundesliga	https://fcbayern.com/en
Bayer 04 Leverkusen Fußball	Germania	Bundesliga	https://www.bayer04.de/en-us#statistics
Fußballclub Union Berlin	Germania	Bundesliga	https://www.fc-union-berlin.de/en/

Fonte: ns elaborazione

Si precisa, in particolare, che è in corso di realizzazione l'analisi dei casi, per cui la discussione e le conclusioni di seguito esplicitate sono ancora parziali, anche se, in diversi casi, già significative. Gli Autori intendono terminare la ricerca nei prossimi mesi e pubblicare un'analisi più approfondita dei risultati ottenuti, che comprenda, ad esempio, anche una valutazione del miglioramento delle performance finanziarie risultate dall'implementazione di queste strategie finanziarie tecnologicamente innovative.

Risultati. *Poiché la ricerca è ancora in corso d'opera, i risultati ottenuti non sono conclusivi, né esaustivi. In linea di massima, sono stati individuati tendenze nuove come quelle relative alla sostenibilità ed alla social responsibility che stanno esercitando impatti significativi anche sulla sostenibilità finanziaria dei club, a dimostrazione dell'adattabilità dell'industria calcistica ai cambiamenti socio-economici e tecnologici. In particolare, si evidenziano le diverse strategie che si evincono dai case study per diversificare e migliorare le fonti di reddito (dalla trasformazione digitale, alla profilazione social, all'e-commerce, alla brand reputation, ai fan token), conseguire una maggiore autonomia e versatilità finanziaria e rafforzare le entrate.*

Sulla base della documentazione fin qui analizzata, tuttavia, si può sottolineare come l'espansione dei contents multimediali, ad es., sia una strategia fondamentale per i club calcistici, perché permette loro di superare i propri ruoli convenzionali di semplici entità sportive. La SSC Napoli, ad esempio, ha avviato, con IQUII, un progetto di vera trasformazione digitale sportiva, partendo dalla creazione di un ecosistema digitale basato sulle funzionalità di SportXP e Fanize, il tutto con l'obiettivo di portare i fan della SSC Napoli al centro del percorso di crescita del brand a livello internazionale. Alla base del progetto della SSC Napoli, la possibilità per gli utenti di vivere la propria passione azzurra secondo meccaniche che rendano la partecipazione attiva un abilitatore di esperienze esclusive grazie all'utilizzo della sport platform SportXP, con accesso a una serie di attività volte a rendere la fan experience coinvolgente e partecipativa attraverso l'utilizzo della Fan Cam per personalizzare e condividere i propri scatti, la partecipazione a survey, sondaggi e quiz per testare le proprie conoscenze sul club e dimostrare l'attaccamento alla maglia e alla sua storia. Questa piattaforma ecosistemica è in grado di aggregare e coinvolgere oltre 10 milioni di tifosi azzurri nel mondo attraverso fan experience esclusive e attività di fan engagement volte a fidelizzare sempre di più una delle fanbase più appassionate dell'intero panorama calcistico mondiale.

Il Borussia e il Bayern Monaco si sono affidati alla profilazione social, affidandosi alle piattaforme come TikTok che attirano un seguito sostanziale grazie a contenuti creativi e coinvolgenti, trasformandosi così in fonti di entrate attraverso partnership, sponsorizzazioni e collaborazioni con influencer.

In Spagna L'Atletico Madrid ha sviluppato una vasta gamma di prodotti a marchio del club, dalle maglie ai cimeli, attraverso i negozi online ufficiali, sfruttando la logica del marketing tribale consolidando il legame con i tifosi in una logica di engagement continuo e diffuso. In questo modo, quindi, l'e-commerce e il merchandising digitale si sono trasformati in fonti di entrate redditizie per il club. Dalla ricerca è emerso che nel 2023 il Barcelona FC ha generato sui social media 168,4 mln di Euro di valore economico. Di questi, il 10% proveniente da investimenti nello sviluppo di progetti di fruizione dei contenuti sportivi mediante il ricorso il metaverso, nonché realizzando un Innovation Hub/Center interno alla società (fonte: IQUII Sport). Più di 41 Club calcistici europei hanno inaugurato un Canale OTT, tra cui Bayern Monaco, Juventus, Barcelona, Real Madrid e Arsenal. Barcelona, Paris Saint Germain, Manchester City ed altri 30 top club europei permettono ai supporters, attraverso l'acquisto di fan token, di prendere parte ai processi decisionali e di esprimere le proprie preferenze per selezionare, ad es., il design delle divise, le campagne promozionali, ect.

In sintesi, i casi studio finora analizzati sottolineano come i club calcistici tendano a superare i propri ruoli convenzionali, applicando strategie di sostenibilità finanziaria per diversificare le fonti di reddito e ridurre la dipendenza da fonti di reddito volatili. Rispetto alla domanda di ricerca, quindi, i risultati ottenuti confermano l'esistenza di trend dei club europei (quantomeno i più virtuosi finanziariamente) verso strategie di sostenibilità finanziaria focalizzate su nuove e più innovative fonti di reddito. Ovviamente occorre ancora valutare un campione più ampio di case study per poter fornire una risposta più precisa e accurata.

L'analisi dei casi studio finora realizzata fornisce interessanti conclusioni sull'evoluzione dell'industria calcistica, sempre più contestualizzata sull'utilizzo di nuove tecnologie ICT. I club calcistici analizzati sono sempre più propensi ad utilizzare le tecnologie blockchain, a coinvolgere i tifosi attraverso Fan Token, Non-Fungible Tokens (NFT) e merchandising digitale, nonché a diversificare la propria attività attraverso canali Over-The-Top (OTT) e/o progetti legati al Metaverso e l'istituzione di Innovation Hub. Tutto ciò ha consentito ai tifosi una maggiore interazione e coinvolgimento con i propri club (ad es. il coinvolgimento in percorsi virtuali e di realtà aumentata e l'introduzione di token dei tifosi basati su blockchain, che permettono un accesso senza precedenti nella vita quotidiana dei club).

In conclusione, emerge anche un altro aspetto, recentemente alcuni autori hanno sostenuto che l'industria del calcio non risulta estranea al dibattito scientifico sulla sostenibilità. I profondi cambiamenti economici negli ultimi decenni (Breitbarth e Harris 2008), i fattori relativi all'engagement dei tifosi (la "connessione affettiva del tifoso" discussa dalla capacità di influenzare la comunità locale attraverso ampi impatti economici e sociali -culturali, emozionali, politici, relazionali, ecc.) nelle aree locali dei club stanno contribuendo allo sviluppo di nuove linee di ricerca sulla sostenibilità nell'industria del calcio. Il coinvolgimento stretto del consumatore, che comprende anche i lavoratori dei club, è un fatto irrefutabile nel calcio. A nostro avviso, questo fattore può essere uno strumento interessante da incorporare nel nucleo dell'organizzazione, in quanto può aiutare a trasmettere i principi della sostenibilità e la cultura della Social Responsibility (SR) agli attori esterni più importanti. Ciò dovrebbe basarsi su una strategia reale che si poggia sui pilastri della SR: responsabilità, sostenibilità finanziarie, cultura della misurazione e comunicazione degli impatti sociali positivi stanno diventando i parametri di riferimento per la competitività nell'industria calcistica. La necessità di una tale

strategia è emersa dalla sua assenza nell'industria del calcio, rivelata nel 2008 dal G14 (l'associazione dei 14 club più influenti in Europa). Il presidente dell'associazione, Jean-Michel Aulas, ha stabilito come obiettivo la valutazione delle attività sociali dei club, con particolare enfasi sulla sistematizzazione analitica per massimizzare gli impatti sociali, principalmente nel "misurare e valutare la nostra performance sociale e gli investimenti nella comunità" (G-14, 2008, p. 62). Un approccio strategico incentrato sulla SR permetterebbe al settore di minimizzare i suoi rischi (Breitbarth, Hovemann, Wazel, 2011), tradizionalmente connessi alle contraddizioni tra la loro vicinanza ai valori positivi dello sport (cameratismo, lavoro di squadra, salute, valori sportivi, connessione con la comunità locale, identità, ecc.) e corruzione, combine, scandali, frodi e altre macchie pubbliche. Oltre a questi rischi, il social washing continua ad apparire come un aspetto critico che viene esercitato in tutto il processo di implementazione della CSR. Lo sport non è estraneo a questo fatto. L'effettiva incorporazione della SR nella gestione strategica del calcio professionistico è un fattore chiave per la sostenibilità dell'attività, anche se è un processo di applicazione lento che coesiste con l'immediatezza con cui l'ecosistema calcistico solitamente opera. Una circostanza che ne genera permanentemente il ritmo, esponendolo al rischio di social washing. Così, il processo di implementazione della SR stesso, composto da una terminologia eterogenea (sviluppo, integrazione e implementazione) prevalente nella letteratura di gestione sportiva (Zeimers et al., 2018) è emerso di recente, seguendo il cambiamento guidato nel campo accademico della SR verso una ricerca più strategica, all'interno di una tendenza più orientata alla pratica, generata proprio dalle sfide e dalle critiche del social washing e anche del green washing (Maon et al., 2010). Bonini et al. (2006) suggeriscono che la consapevolezza della CSR dovrebbe essere incorporata nei processi decisionali strategici di base per scongiurare rischi finanziari e reputazionali a lungo termine. La ricerca evidenzia anche come migliorare la cultura della misurazione attraverso un sistema adeguato di standard è il mezzo che permetterebbe ai club di avanzare ulteriormente verso una vera cultura della sostenibilità e della SR. In qualsiasi forma di gestione strategica, la misurazione e la valutazione delle prestazioni è un processo essenziale nel prendere decisioni a medio e lungo termine; così come lo è anche nella performance di sostenibilità, o anche di più, data la multidimensionalità del concetto e l'importanza fondamentale che ha acquisito negli ultimi anni. Inoltre, vi è un ampio dibattito riguardo a quanto le case study possano estrapolare conclusioni e testare diversi approcci (Engert e Baumgartner, 2016). Nel caso qui discusso, siamo stati testimoni privilegiati di una situazione di difficile accesso per l'osservazione scientifica, e quindi i dati ottenuti sono rivelatori. È per questo motivo che il confronto dei risultati di questo caso di studio con altre evidenze nella letteratura specializzata può offrire paralleli che supportano argomentazioni e conclusioni che gettano luce sul dibattito e sulla mancanza di studi sulla distanza tra strategie di formulazione teorica nella SR e la loro applicazione pratica.

Limiti della ricerca. Al momento la ricerca, non ancora conclusa, si basa su un campione ridotto di club calcistici. Pertanto, potrebbero sussistere limiti di rappresentatività (per cui le conclusioni tratte dal campione potrebbero non essere applicabili all'intera popolazione) e di variabilità nei risultati (con difficoltà a individuare le vere differenze o tendenze del settore, poiché l'effetto del caso è più pronunciato).

Implicazioni manageriali. Il paper descrive l'avvento delle nuove tecnologie nell'industria del calcio e l'impatto che queste hanno sul tema della sostenibilità, della social responsibility, dell'efficientamento economico. Emergono nuove ed innovative forme di governance finanziaria che dimostrano una capacità manageriale di rispondere alle esigenze del mercato tempestivamente e con modalità estremamente efficaci ed efficienti.

Originalità del paper. La ricerca indaga su un settore, quello delle imprese calcistiche, che in letteratura è stato poco esplorato. Soltanto negli ultimi anni, per la pressione cogente della normativa comunitaria, si è iniziato a parlare di adeguamento delle strategie finanziarie dei club calcistici ai vincoli di bilancio. Per questo motivo la ricerca è nuova e originale, abbracciando tematiche di grande interesse, ma finora poco menzionate e analizzate.

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Rivelare il potenziale nascosto della natura: il ruolo del *management* nelle *public policy* per la biodiversità

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Abstract

Questo lavoro di ricerca analizza le implicazioni di public policy relative alla protezione e valorizzazione della biodiversità che emergono dagli studi di management. Considerando l'urgenza di affrontare il problema della perdita di biodiversità, emerge la necessità di strutturare un'azione immediata da parte di aziende e istituzioni. Tuttavia, l'approccio delle public policy in merito deve essere mirato e ben definito per affrontare efficacemente questa sfida.

Attraverso una analisi sistematica della letteratura, questo lavoro rivela che la tutela della biodiversità richiede collaborazione tra tutti gli stakeholder e politiche inclusive che coinvolgano le comunità locali e promuovano l'uso sostenibile delle risorse naturali. È cruciale anche incentivare le imprese a valorizzare i servizi ecosistemici, bilanciando l'aspetto economico con quello sociale relativo alla conservazione della natura. La multidisciplinarietà e un cambiamento di paradigma sono essenziali per affrontare questa sfida complessa, insieme a una governance adattiva che si adatti alle dinamiche socio-ecologiche in evoluzione.

Keywords: *biodiversità; innovation policy; servizi ecosistemici; analisi sistematica; inclusività*

Impostazione della ricerca. *Le conseguenze dannose sulla complessiva prosperità economica e sociale derivanti dalla perdita di biodiversità e dal conseguente degrado degli ecosistemi naturali sono sempre più riconosciute come una impresa sfidante, che richiede un'urgente attenzione da parte dell'intero panorama sociale ed economico (Boiral and Heras-Saizarbitoria 2017; Macellari et al. 2018; Leclère et al. 2020). La gravità di tali impatti richiede un'azione sostanziale e immediata da parte di tutte le parti interessate, soprattutto da parte delle aziende e delle istituzioni (Panwar et al. 2023). In questo contesto, diventa centrale il ruolo degli studi di management nell'identificazione delle implicazioni di policy in grado di guidare lo sviluppo sostenibile per salvaguardare e preservare la biodiversità.*

Le public policy relative alla Scienza, Tecnologia e Innovazione (STI) sono recentemente passate dall'essere orientate alla crescita al plasmare attivamente il futuro corso della tecnologia e dei mercati, in particolare per affrontare le sfide sociali (Bergek et al. 2023). Tuttavia, l'esplorazione empirica della relazione tra le policy STI e le transizioni socio-tecniche rimane notevolmente sottosviluppata (Borrás and Schwaag Serger 2022). Il concetto di approcci "orientati alla missione" ("mission-oriented policy"), come sottolineato da Mazzucato (2015), evidenzia l'importanza di definire con precisione gli obiettivi, le logiche e le prerogative delle policy (Diercks et al. 2019), soprattutto per evitare che policy volte ad agevolare alcuni gruppi finiscano con l'esaurire le risorse naturali, economiche ed innovative di altri (Lehmann and Menter 2018).

Alcuni autori hanno proposto la soluzione del policy-mix come potenziale approccio per affrontare le sfide sociali. Tuttavia, quello che risulta davvero necessario è un allineamento tra la letteratura delle policy per l'innovazione con la letteratura sulla gestione dell'innovazione e R&D per guidare efficacemente la transizione alla sostenibilità (Edmondson et al. 2019). Superare la resistenza all'utilizzo di nuove tecnologie da parte degli stakeholder evidenzia l'importanza di gestire la ricerca e sviluppo attraverso alleanze per l'innovazione e la co-creazione, creando sinergia tra pubblico e privato (Kemp and Never 2017). Questo panorama competitivo in evoluzione, guidato dalla rapida nascita di nuove tecnologie, richiede una nuova prospettiva sulla policy dell'innovazione, che incoraggi l'affrontare le questioni sociali favorendo allo stesso tempo lo sviluppo di nuovi ecosistemi che non siano vincolati da prospettive di "path-dependencies" (Schot and Steinmueller 2018).

Integrare quindi le letterature di management, gestione dell'innovazione e politiche per l'innovazione per superare la grande sfida della protezione e valorizzazione della biodiversità risulta un approccio necessario. Quindi, attraverso

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un'analisi sistematica della letteratura, con questa ricerca si vogliono sistematizzare i risultati relativi alle implicazioni di policy che emergono dagli studi di management per la conservazione e valorizzazione della biodiversità.

Obiettivo del paper. Dato che i policymaker sono regolarmente identificati come uno dei destinatari delle ricerche di management (Aguinis et al. 2022) e considerando che la questione della perdita di biodiversità deve essere affrontata dall'intero sistema economico (Dasgupta 2021), si registra una crescente necessità che la letteratura di management affronti le questioni relative alla biodiversità per contribuire concretamente alle policy. Pertanto, in questo articolo, poniamo le seguenti domande di ricerca: quali sono le implicazioni di policy che emergono dalla letteratura di management relative alla biodiversità? In che modo i risultati del mondo accademico possono supportare i policymaker sulla questione della perdita di biodiversità e modellare la futura agenda di ricerca nel campo della gestione dell'innovazione per la biodiversità?

Metodologia della ricerca: Per rispondere alla nostra domanda di ricerca, abbiamo condotto un'analisi sistematica della letteratura, utilizzando la metodologia descritta da Danese et al., (2018), Macpherson e Jones (2010) e Tranfield et al., (2003). Come evidenziato da diversi autori (Spina et al., 2013; Wang & Chugh 2014) questo approccio presenta numerosi vantaggi rispetto alle tradizionali revisioni non strutturate. In particolare, esso adotta un processo replicabile, scientifico e trasparente (Tranfield et al., 2003, p.209) che consente di: minimizzare i bias e gli errori (Tranfield et al. 2003); migliorare la qualità del processo di revisione e dei risultati (Mihalache e Mihalache 2015); confermare la validità attraverso la replicazione di fasi chiare durante il processo di revisione (Wang e Chugh 2014); sintetizzare e organizzare la letteratura accumulata in un campo specifico (Wang e Chugh 2014), fornendo spesso agli accademici e ai professionisti un quadro delle conoscenze esistenti (ad esempio Kunisch et al. 2023; Mihalache e Mihalache 2015).

Inoltre, la revisione sistematica della letteratura è un approccio versatile, ampiamente adottato in studi recenti pubblicati su riviste scientifiche di alta qualità su diversi temi di ricerca, come l'innovazione (Adams et al. 2015). Per questi motivi, riteniamo che la revisione sistematica della letteratura sia il metodo più adatto per il nostro obiettivo di ricerca, ovvero offrire una revisione sistematica e approfondita delle implicazioni di policy emergenti dagli studi di management sulla biodiversità.

La metodologia si compone di quattro fasi.

Innanzitutto, gli autori hanno ricercato "biodiversità" nei campi "management" o "business" nel Web of Science e "business, management and accounting" in Scopus, limitatamente a titoli, abstract e parole chiave, fino all'anno 2023. Il risultato è un totale di 3.455 documenti.

In secondo luogo, riconoscendo che la biodiversità comprende uno spettro più ampio di concetti, gli autori hanno ampliato la ricerca per parole chiave per includere il concetto di ecosistemi naturali. Nell'ambito della ricerca di management, esiste un corpus di letteratura in espansione relativo agli "ecosistemi di innovazione" o "ecosistemi imprenditoriali", che giustifica la necessità di una ricerca mirata su termini specifici relativi agli ecosistemi naturali. Pertanto, seguendo la classificazione dell'IUCN (2020), abbiamo formulato la seguente query di ricerca che contempla anche le varie tipologie di ecosistemi naturali:

(biodiversity OR "natur ecosystem*" OR "terrestrial ecosystem*" OR "subterranean ecosystem*" OR "marine ecosystem*" OR "freshwater ecosystem*" OR "atmospheric ecosystem*" OR "ecosystem* service*")*

Questo approccio ha aggiunto complessivamente 1.696 documenti alla raccolta. In particolare, questa ricerca ha restituito 830 documenti da WoS e 4.321 documenti da Scopus, per un totale di 5.151 documenti.

In terzo luogo, gli autori hanno limitato la ricerca ai documenti scritti in inglese e limitato i risultati solo agli "articoli" pubblicati. Tale selezione mirata verso gli articoli pubblicati è stata motivata dalla volontà degli autori di garantire che le politiche trattate nel documento fossero il frutto di un processo di revisione rigoroso da parte di esperti del settore. Successivamente, gli autori hanno proceduto con la rimozione dei duplicati. Infine, seguendo gli approcci di (Bonfanti et al. 2024) e (Acciarini et al. 2023), hanno filtrato in base alle riviste dell'Association of Business Schools classificate 3, 4 e 4*, che è la classifica riconosciuta a livello internazionale delle principali riviste di tutto il mondo nei settori del business e dell'economia. La scelta di concentrarsi esclusivamente sugli articoli pubblicati solo in riviste classificate 3, 4 e 4* è stata dettata dalla volontà di garantire un elevato standard di rigore metodologico e critico nei risultati di ricerca. In seguito a questa operazione è stato ottenuto un dataset finale composto da 374 documenti (con la rimozione di 2.232 documenti).

Infine, gli autori hanno condotto una content analysis degli articoli con l'obiettivo di sistematizzare le implicazioni di policy che emergono dal nostro set di dati. Abbiamo aderito all'approccio adottato da Soll e Larrick (2009) e stabilito in modo collaborativo i criteri per includere ed escludere gli articoli di ricerca. Seguendo il lavoro di Aguinis et al. (2022), è stata fatta una distinzione tra articoli che includono implicazioni di policy esplicite (cioè policy dirette) e quelli che includono implicazioni di policy non direttamente esplicitate nel documento (cioè policy indirette). Gli autori hanno analizzato separatamente i 374 articoli. Ciascun autore ha identificato e selezionato le implicazioni di policy esplicite ed implicite di ciascun articolo. Successivamente, gli autori hanno analizzato gli elementi comuni tra gli articoli e hanno condiviso tra loro i risultati.

Risultati. Dall'analisi preliminare di circa un terzo del dataset, emergono chiaramente sei punti fondamentali.

In primo luogo, la protezione e valorizzazione della biodiversità richiede una forte collaborazione e coordinamento tra tutti gli stakeholder interessati. Risulta necessario strutturare nuovi spazi di discussione e nuovi framework per esaminare e promuovere dinamiche interattive tra imprese, enti pubblici, organizzazioni non governative, agenzie di finanziamento e comunità locali. Questo approccio collaborativo è ritenuto essenziale per attuare politiche efficaci che

non solo mitigano la perdita di biodiversità ma promuovono anche pratiche di sviluppo sostenibile, andando a responsabilizzare le organizzazioni in modo efficace.

Un secondo punto fondamentale è l'inclusività delle strategie. Le policy innovative per la protezione della biodiversità dovrebbero promuovere strategie inclusive e relazioni sinergiche tra biodiversità e comunità locali. Coinvolgere le comunità indigene è prezioso, soprattutto in settori dove i rischi associati per la comunità sono molto alti. Questo permette anche di strutturare soluzioni che siano tarate al luogo dove la perdita di biodiversità deve essere combattuta. Infatti, sebbene la perdita di biodiversità sia una sfida globale, le soluzioni vanno trovate a livello locale.

Come terzo punto, emerge l'importanza di creare policy che incentivino le imprese private a valorizzare i servizi ecosistemici. Alcuni esempi riguardano la strutturazione di pagamenti per i servizi ecosistemici o compensazioni per la perdita di biodiversità (i cosiddetti "biodiversity credits"). Questo permetterebbe da un lato di incentivare le azioni di conservazione della biodiversità e dall'altro di promuovere crescita economica. La valorizzazione dei servizi ecosistemici, tuttavia, va bilanciata con policy che affrontino il problema della proprietà intellettuale in modo da evitare una eccessiva mercificazione della biodiversità, con conseguente aumento dello sfruttamento della natura piuttosto che della sua valorizzazione.

Il quarto punto che emerge è che la creazione di questo delicato sistema che coinvolge i diversi attori dell'ecosistema innovativo richiede una forte spinta verso la promozione della multidisciplinarietà. Policy e incentivi che promuovano il collegamento tra diversi settori disciplinari in modo da sviluppare approcci efficaci per il monitoraggio, la conservazione, il ripristino e la valorizzazione della biodiversità emerge come un'altra forte raccomandazione di policy.

Il quinto punto fa riferimento ad un elemento che emerge in maniera esplicita da molti degli articoli analizzati finora, ovvero la richiesta di promuovere un cambiamento sistemico nell'approccio alla relazione tra le attività commerciali (cioè attività di business) e la biodiversità. Questo cambiamento deve coinvolgere l'intera catena del valore, affinché sia evidente sia per i produttori che per i consumatori che la tutela della biodiversità non rappresenta solo un costo da sostenere, ma anche un beneficio per lo sviluppo delle proprie attività. In questo senso, le policy efficaci dovrebbero incentivare lo sviluppo di sistemi innovativi di raccolta dati che permettano una sistematizzazione e una diffusione efficace della conoscenza sul valore della protezione della biodiversità.

Infine, il sesto ed ultimo punto, enfatizza la necessità di avere approcci di governance adattivi che possano far fronte alle incertezze e alle complessità inerenti agli sforzi di conservazione della biodiversità. Le policy che enfatizzano la gestione adattiva, il coinvolgimento delle parti interessate e i processi decisionali partecipativi sono ritenute essenziali per migliorare la resilienza e la capacità di adattamento dei sistemi socio-ecologici di fronte alla perdita di biodiversità e al cambiamento ambientale. Questo paradigma di governance adattiva riflette un crescente riconoscimento dell'interconnessione tra le attività umane e gli ecosistemi naturali, richiedendo framework flessibili e reattivi in grado di adattarsi alle dinamiche socio-ecologiche in evoluzione.

Limitazioni della ricerca. *L'analisi svolta finora è ancora in una fase preliminare, pertanto i risultati non sono ancora fortemente sistematizzati. Inoltre, la nostra analisi impone diverse limitazioni metodologiche. In primo luogo, la costruzione della query di ricerca specificata nelle keyword di "biodiversity" insieme alle specifiche costruzioni relative agli ecosistemi così come identificata nella sezione di metodologia, potrebbe aver portato alla non inclusione di alcuni paper rilevanti. Una soluzione ideale per ampliare il bacino di articoli sarebbe stata quella di utilizzare la keyword più generale "ecosystem". Tuttavia, nella letteratura di management esiste un forte filone di ricerca dedicato allo studio degli ecosistemi innovativi. Questa soluzione avrebbe dunque portato ad un dataset iniziale con un elevato numero di falsi positivi. Il nostro approccio cerca di ovviare a questo problema, cercando allo stesso tempo di ampliare il più possibile il bacino di articoli analizzabili.*

Una seconda critica potrebbe emergere dalla limitazione agli articoli pubblicati esclusivamente in riviste dell'Association of Business Schools classificate 3, 4 e 4. Se da un lato è pur vero che questo approccio riduce notevolmente il numero di articoli presenti nel nostro dataset, dall'altro questo permette di concentrarsi sugli articoli che presentano ricerca di alta qualità e che hanno un forte impatto sia nel mondo accademico che pratico (Crossan and Apaydin 2010). Studi futuri potrebbero considerare di non imporre questa limitazione in modo da ampliare l'analisi e verificare la robustezza dei nostri risultati.*

Inoltre, la nostra revisione della letteratura è circoscritta ad articoli scientifici del settore di management. In futuro, vista la multidisciplinarietà del tema trattato, nuovi lavori potrebbero esplorare quali raccomandazioni per la protezione della biodiversità emergono da altri settori e quindi ampliare il contesto di analisi. Infine, per questa analisi abbiamo selezionato solo articoli scientifici, mentre sono stati esclusi libri, atti di convegni e documenti di policy. Studi futuri potrebbero prendere in considerazione anche questi altri tipi di pubblicazioni per arricchire la comprensione del fenomeno.

Implicazioni manageriali. *Le implicazioni manageriali tratte da questo studio sono significative e possono influenzare l'approccio delle aziende nei confronti della biodiversità e dell'innovazione. Innanzitutto, le aziende devono comprendere che la protezione e la valorizzazione della biodiversità non sono solo questioni ambientali, che la tutela della biodiversità è essenziale per il successo a lungo termine e la sostenibilità del proprio business. Pertanto, è fondamentale che le aziende adottino un approccio protettivo e integrato che tenga conto degli impatti delle proprie attività sull'ambiente e sulle società. Tale approccio potrebbe iniziare con l'implementazione di programmi di sensibilizzazione sulla tutela della biodiversità rivolte sia verso i dipendenti che alle comunità locali. Questo*

coinvolgimento non solo migliora la legittimità sociale delle aziende, ma può anche favorire la creazione di soluzioni più efficaci ed adatte al contesto locale.

In secondo luogo, le aziende devono adottare approcci flessibili e adattivi nella gestione delle attività. Questo significa essere pronti ad affrontare l'incertezza e a adattarsi ai cambiamenti ambientali, lavorando in collaborazione con altre parti interessate e adottando pratiche innovative. In particolare, le imprese ed i manager devono cercare di promuovere nuovi spazi di discussione e sviluppare relazioni sinergiche con enti pubblici, organizzazioni non governative e comunità locali. Questa cooperazione è essenziale per attuare le indicazioni di policy che non solo mitigano la perdita della biodiversità ma promuovono anche pratiche di sviluppo sostenibile, responsabilizzando efficacemente le imprese.

In terzo luogo, questo studio fornisce un quadro completo delle implicazioni legate alla conservazione della biodiversità. Le aziende e le istituzioni dovrebbero utilizzare queste conoscenze per sviluppare pratiche più efficaci che contribuiscano alla protezione dell'ambiente e alla prosperità economica e sociale.

Originalità del paper. Il contributo fornito alla letteratura rappresenta un passo significativo nel colmare il divario che separa la letteratura manageriale e quella di policy, con l'obiettivo primario di conseguire un migliore allineamento tra questi due ambiti. Tale impegno riveste un'importanza cruciale nel fornire una guida efficace e nel delineare un futuro percorso di ricerca per gli studi di management incentrati sulla transizione alla sostenibilità (Edmondson et al. 2019). Questo è ancora più rilevante nel caso della protezione della biodiversità, che rappresenta una sfida sistemica e globale richiedendo un approccio interdisciplinare e una collaborazione sinergica tra diversi settori e discipline.

L'importanza di questo lavoro risiede anche nell'offrire un nuovo e originale approccio che favorisce la connessione tra due corpus di letteratura spesso disgiunti, offrendo un prezioso contributo non solo alla comprensione del problema, ma anche alla sua applicazione pratica. La ricerca fornisce indicazioni per azioni e politiche che possano guidare concretamente gli sforzi volti alla protezione della biodiversità e alla promozione della sostenibilità su scala globale.

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A explorative analysis on the impact of ESG and ESG 's controversies on corporate performance

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Abstract

This study aims to analyze the impact of ESG and controversies scores on idiosyncratic volatility of firm performance in the energy sector. The current study to examine the relationship between ESG, Controversy, and Volatility, considering the contextual differences and regulatory practices. In particular seeks to answer the following critical research questions: Does ESG score affect the idiosyncratic operating volatility? Does the controversy score affect idiosyncratic operating volatility? Is the legal system (common law or civil law) a driver of linkages between ESG, controversies and the firm's risk? We investigate our hypotheses on the energy sector, which is generally more exposed to the same ESG variables. The energy sector is strongly responsible for carbon emissions into the atmosphere globally due to using sources mainly of fossil origin, such as coal, gas, and oil. It alone explains the strong interest among investors in ESG compliance of companies operating in the energy industry.

Key words: ESG; Controversies; volatility; performance; energy sector

Framing of the research. *Several scholars have produced methods to measure ratings and scores of ESG and controversies, as it has been widely discussed (Berg et al., 2019). However, empirical studies on the relationship between ESG and a firm's performance have provided contradictory results. While some studies show that engaging in ESG practices rise a firm financial performance (e.g., Eccles et al., 2014; Lo & Sheu, 2007; Wang & Sarkis, 2017; Fatemi et al., 2018), others have found the opposite (e.g., Brammer et al., 2006; Lee et al., 2016). Few other scholars have also suggested that the ESG score and firm's performance have no relationship (e.g., Galema et al., 2008; Orlitzky et al., 2003.) In other contributions, the authors highlight an unclear relationship between ESG scores (or ratings), expected return volatility, and stock prices. Most of such articles have been developed according to a market logic, where the capital market is implicitly assumed to operate in equilibrium conditions. Instead, assuming a capital market in disequilibrium, the positive or negative correlation between ESG and volatility comes from a risk perception (Somani et al., 2021; Landi et al., 2022) rather than the volatility of ESG investments. For that reason, we move forward to measure the effect of ESG on volatility by using accounting statements so company results are not influenced by market momentum, market frictions, and information asymmetry.*

This study offers contributions to the ESG field from a risk management perspective. First, our study aims to provide empirical evidence of the link between ESG performance, controversies score, and idiosyncratic volatility measured objectively (i.e., not influenced by market perceptions). Second, the paper contextualizes how ESG and controversies act on the volatility of companies in the energy sector and operate in countries with opposing legal systems (common law and civil law), characterized by different logic that protect investors' interests. Third, the paper's output can be considered the starting point for understanding how to manage the idiosyncratic volatility arising from ESG compliance and the controversies level. In particular, this work intends to adopt a multidisciplinary approach that combines various theories: the theories defined as shareholder views, such as the theory of agency and property rights. In line with these theoretical strands, other vital contributions will be used, which are fundamental for the growth of knowledge in sustainability management. In this perspective, we use the Institutional Theory, Path Dependence Theory, Resources Theory, and finally, the studies which have investigated linkages between idiosyncratic risk and firms features (Brown &

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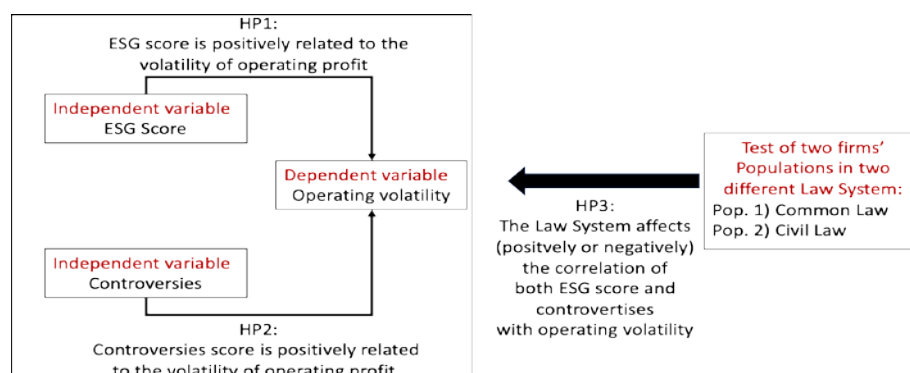
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Kapadia, 2007; Campbell et al., 2001; Cao, Simin, & Zhao, 2008; Ferreira & Laux, 2007; Irvine & Pontiff, 2009; Lee & Faff, 2009; Mazzucato & Tancioni, 2008; Panousi & Papanikolaou, 2012; Pontiff, 2006). In detail, the Agency Theory setting is very useful for understanding context's impact on our variables' behavior. In particular, we have to consider two aspects: on the one hand, the influence of the degree of protection that the context applies to the shareholders; on the other, the interpretation of the concept of ownership dictated by the regulatory context.

To fully understand the influence on volatility, it is necessary to refer to the considerations of the resource dependence theory, which introduces essential axioms regarding fixed costs because of durable resources that can be exploited in the long run. This theoretical approach allows the decomposition of operating volatility from a managerial point of view. For instance, it arises as a bridge between traditional volatility analysis and those studies tied to the Resource Based View. In this regard, Aiken & Hage (1968) identified some distinctive elements, like risk drivers, exploring organizational interdependence and intra-organizational structure. In this way, for our research, it is essential to consider the slack resources. In fact, according to the above considerations, slack resources play an important role in linking volatility analysis with internal companies' features⁶. In general terms, slack resources are linked to the operating volatility coming from ESG compliance when ESG investments imply a marginal increase in fixed costs and, consequently, higher functional profit sensitivity against business volatility (Renzi et al., 2017). The conceptual model in Figure 1 guided our study.

Fig. 1: Conceptual Model



So, the model's independent variables are the score of EGS and controversies. According to hypothesis 1 (HP1) and hypothesis 2 (HP2), the dependent variable, operating performance volatility, is positively influenced by such independent variables. The third theoretical hypothesis (HP3) is a not-neutral role of the legal system (common law and civil law) regarding the effects of the independent variables rather than operating volatility.

ESG score and HP1

The ESG score is the starting point to provide information for investors on their portfolio's risk-return profile, linking typical financial information with no financial ones, especially those related to climate change, new regulations, and governance (Aluchna et al., 2009). Cegarra et al. (2016) defined ESG as social, environmental, and economic concerns in business operations and stakeholder interaction. By analyzing a sample of around 400 firms from the EuroStoxx-600 index from 2011 to 2020, researchers discovered that the ESG score considerably affects the firm's profitability. The empirical research on the impact of ESG on financial performance and corporate worth does not provide unambiguous conclusions (Fatemi, Glaum & Kaiser 2018). In recent years, numerous studies have attempted to measure the impact of ESG factors on performance and a firm's valuation (Zhan, 2023; Chouaibi, Chouaibi & Rossi, 2022). These results suggest that prioritizing environmental and social disclosures can potentially enhance a company's return on assets. The results suggest a significant correlation between a company's disclosure practices and ROA.

Idiosyncratic risk mainly relies on elements that are peculiar to a specific company. However, scholars argue that idiosyncratic volatility is not crucial since inefficient markets' diversification process may effectively mitigate its impact. Yet, the efficiency of capital markets could be negatively affected by many factors, such as transaction costs, agency issues, and informational challenges characterized by asymmetric information. Hence, market inefficiencies amplify the significance of idiosyncratic risk, as highlighted by Mishra and Modi (2013). Horn's (2023) latest study revealed that receiving ESG scores is associated with reduced idiosyncratic stock risk. The impact is much more significant for equities with a better ESG score. While receiving a lower ESG score, corporations still exhibit much reduced idiosyncratic risk compared to equities that do not possess an ESG score.

Furthermore, equities that undergo a negative screening process have reduced levels of idiosyncratic risk in times of economic downturns in comparison to similar companies that possess an ESG score but do not undergo a negative

⁶ Slack resources, as well known, originates from the dominant coalition's contingencies, organizational characteristics, and values or beliefs (Sharfman et al., 1988). Other authors consider slack instead as an exogenous variable (Bourgeois & Singh, 1983). Although many typologies and taxonomies of slack have been created (Cohen, March, & Olsen, 1972; Cyert & March 1963; Moses, 1992), one helpful way to categorize slack is to distinguish between high and low discretionary resources (Sharfman et al., 1988).

screening process. A study conducted by Reber, Gold, and Gold (2022) showed that companies that engage in ESG information sharing have reduced levels of idiosyncratic risk compared to their peers. According to Kuo et al. (2021), an excessive focus on corporate investment in ESG activities can harm critical business operations and a company's immediate financial performance.

Moreover, the study conducted by Hurduzeu et al. (2022) indicated that companies in the energy sector observed a decline in their financial performance when they implemented ESG practices. Nitarlp and Kiattisin's (2022) findings show that the implementation of vigorous ESG criteria substantially crashes the financial performance of stocks within the energy sector. However, most of the research suggests that there is a positive relationship between firms' financial success and their ESG performances (e.g., Brogi, Lagasio, 2019; Kim & Li, 2021; Aureli et al., 2020; Zhang et al., 2021; Zhao et al., 2018). These studies noticed that portfolios with high ESG scores exhibit a significant increase in excess returns compared to portfolios with poor ESG scores. Those with better ESG performance often exhibit lower levels of stock price volatility than those with worse ESG performance (Moalla & Dammak, 2023). Research findings have shown that portfolios incorporating ESG factors provide enhanced returns and decreased risk compared to traditional portfolios. ESG scores have a moderating influence on both volatility and downside risk.

Furthermore, it has been observed that firms implementing (ESG) have shown an enhanced ability to achieve greater resilience to risks (Ouchen, 2022; Reber et al., 2022; Chen, Kuo, & Chen, 2022;

Oman Khanlen et al., 2021; Yoo et al., 2021). In general, we argue that the contradictory results produced so far in the literature regarding the risk-return profile of ESG are the consequence of market dynamics that are not always aligned with the corporate drivers of operating profitability and its idiosyncratic volatility. To obtain results not influenced by short-term market dynamics, we assume ESG objectives as a source of incremental operating risk because they positively influence the costs' rigidity.

Therefore, we hypothesize that:

H1: ESG score is positively related to the volatility of operating profitability.

Operating volatility decomposition

To better understand the meaning of HPI, we believe it is useful to show a brief accounting decomposition of the volatility concerning operating profitability.

Operating profitability, often known as operating income, is a conventional metric to evaluate the fundamental performance of a company's primary operations. Driving profitability is quantified by calculating the operating income ratio to net investment. This analysis assumes that the standard deviation of the operating income ratio measures idiosyncratic operating volatility. Using accounting data, this kind of volatility arises as a proxy for unleveraged risk.

Several academic researchers contend that the risk can be broken down by considering both the intrinsic volatility of a particular business and the extent to which operating profit responds to changes in revenue dynamics (Griffin, Dugan, 2003). Furthermore, it is crucial to emphasize the effect of profitability size rather than operating volatility. In other words, operating volatility is influenced by operating profitability, as shown by the Renzi et al. (2017) study, which utilizes either a predicting or historical approach. Figure 2 provides a comprehensive overview of the logical-quantitative framework used in the operating volatility decomposition, as seen from an accounting standpoint. Chung and Neethling (1989) assert that revenue volatility may be attributed to the cyclical nature of the specific sector in which a firm operates. Ross, Westerfield, and Jaffe (2002) have noted that the volatility of revenues might possess an endogenous characteristic whereby a company's inclination towards change and innovation creates strong variation in sales and selling prices.

In our study, we assume no direct correlation between ESG compliance and the level of revenue volatility. The limited impact of customer preferences and corporate reputation on revenue generation in the energy sector can be attributed to this phenomenon. However, the extent to which this phenomenon occurs is primarily contingent upon external variables, namely the fluctuation of oil and petrol prices. Hence, from our standpoint, a possible positive relationship exists between ESG compliance and the OP's volatility, mainly from internal factors. In other words, ESG compliance becomes a volatility driver when it contributes to a marginal increase in fixed costs, which serves as the critical determinant of DOL, as suggested by De Medeiros, Gustosa, and Dantas (2006). From this perspective, revenue volatility is considered a control rather than an independent variable. Moreover, the concise theoretical framework outlined in this study serves as a valuable tool for interpreting empirical findings in a managerial context. The alignment between the observed empirical results and the research hypotheses suggests that the independent variables have a discernible impact on firm volatility, which can be attributed to the underlying structural characteristics of energy sector firms. Conversely, a weak correlation between the independent variables and operating volatility would indicate that these firms exhibit greater structural stability than the influence of factors such as ESG score, controversies score, and institutional context.

ESG Controversies and H2

ESG controversies represent a novel aspect of ESG factors, including negative practices that companies may embrace. These practices include the release of waste materials, which pertains to the environmental part, the violation of employee rights, which belongs to the social factor, and the adoption of corrupt practices by managers, which refers to the governance component (Arechavaleta, 2010; Fiaschi, 2020). The ESG controversy score encompasses a total of 23 themes of disagreement.

Nevertheless, exploring disputes within ESG factors is a relatively recent development, and the current body of literature on this topic is constrained in its scope and depth. Hence, further studies on other perspectives will enhance the comprehension of the subject matter (Kuzmina et al., 2023). The notion of a "controversies score" has been a topic of

recurrent discussion within academic discourse. The field of ESG controversies is quite interesting, but it confronts obstacles owing to the lack of an established definition. Clarifying the process of establishing a plan for addressing controversies would benefit companies. Furthermore, firms need to analyze and restructure their business models thoroughly and plan to maintain their operations, particularly when they bring attention to controversial problems (Passas et al., 2022). Confident investors tend to establish a correlation between controversies and the sector within the operating companies.

Controversies can be considered observable shortcomings inside a business that possesses the capacity to have a substantial influence on both the organization itself and its financial performance (De Franco, 2020). Issa, Ayman, and Jalal (2023) claim that ESG controversies may substantially affect a company's financial performance (Sheehan et al., 2023). The occurrence of such issues has the potential to result in significant declines in shareholder value (Aouadi & Marsat, 2018).

DasGupta (2022) analyzes a global dataset including 27 countries from 2010 to 2019, aligning with a comparable research trajectory. The author argues that organizations exhibiting poor financial performance and high ESG controversies are more inclined to achieve high ESG performance. Marsat et al. (2022) primarily focus on environmental concerns and use a comprehensive global dataset between 2010 and 2016 to illustrate the significant impact of environmental performance on a company's ability to withstand and recover from shocks resulting from such controversies. De Franco's (2020) study shows a strong correlation between elevated ESG problems and the subsequent effect on stock returns for the US and European equities. Europe has a discernible phenomenon known as the surprise impact, whereby unexpected and significant reductions in debate levels tend to be linked with enduring adverse excess returns for up to 12 months after the downgrade. The individual in question does not anticipate an unexpected impact on the US, yet the market imposes penalties for gradual downgrades, which signify a worsening trend. Based on the researcher's findings, the primary factor contributing to this outcome is the significant responsiveness of markets to fluctuations in degrees of controversies in both scenarios. Based on these contradictory findings, we hypothesize that:

H2: ESG Controversies are positively related to the Volatility of operating profit

Legal system (common law vs. civil law) and HP3

Civil and common law are two primary legal systems widely recognized and practiced globally. (La Porta et al., 1997, 2008). Issacharoff and Miller (2013) illustrate that in civil law jurisdictions with a lower probability of shareholders initiating legal action against management or directors, companies have greater latitude in opting not to prioritize environmental, social, and governance.

ESG performance frequently encompasses obligations beyond regulatory mandates (Castillo & Rodríguez). Based on a recent study done in 2021, it has been noted that firms operating inside civil-law jurisdictions have higher levels of ESG performance compared to enterprises operating within common-law jurisdictions. The observed discrepancy in ESG performance might be ascribed to differences in the extent of protection afforded to investors' rights (IPR) under the respective regulatory frameworks. The notion being discussed may be defined as a set of rules and principles created to protect the rights and interests of individuals acting as investors and against unethical market participants (Clark, 1976). Investor protection law aims to provide investors with the essential information required to make educated financial decisions that align with their interests and financial characteristics (Siri & Zhu, 2019). The scholarly literature has extensively recognized the importance of a nation's national culture in shaping differences in values, beliefs, traditions, and customs among individuals and firms from diverse cultural backgrounds (e.g., Ho et al., 2012; Hofstede, 1980, 2001; Hofstede et al., 2010; Peng et al., 2012; Shi and Veenstra, 2020; Waldman et al., 2016).

On the other hand, it is also understood that the effect of ESG controversies may be shaped by contextual factors, namely the control system, which can vary between a market system and a bank system. In Common Law countries, several scholars contend that the degree of controversy may be heightened due to the delegation of control mechanisms to the market, which exhibits more vigilance in monitoring ESG standards. In this context, the level of controversy is heightened when the marketer has ownership of the firm. In contrast, civil law systems have reduced degrees of controversy due to the internal nature of their regulatory mechanism. In legal systems adhering to established norms, such as those found in common law systems, heightened shareholder activism may give rise to a greater level of contention.

In addition, the literature on path dependence has partially highlighted how the context impacts the observable behavioural dynamics within companies. Different legal systems can influence behaviours and phenomena such as moral hazard, shareholder protection and advocacy mechanisms, and the external communication actions of one's sustainability practices. In this regard, Zhang (2022) argues that firms tend to engage in ESG greenwashing activities, producing misleading disclosures under financial constraints, where the regulatory context favours this.

In common law systems, the absence of disclosure obligations has existed since 1817 (United States Supreme Court, *Laidlaw v. Organ* ruling). Indeed, there is no duty for the contractors of a agreement to reveal information of their exclusive knowledge, even when these alter the economic conditions of the relations between the parties. Indeed, misrepresentation, if unintentional, leads exclusively to rescission, a typical retrospective extrajudicial annulment of the common law system. The latter is much more exposed to controversies due to its very nature: it is a market-based system characterised by widespread shareholding, in which the first action of control is precisely exercised by the market that can evaluate the performance of companies. This is why it is very difficult for ownership in common law countries to control management's actions effectively. In this context, even small investors assume speculative behaviours (Esposito De Falco S, 2014, 2024).

Civil law economies present the opposite problem. These are bank-based systems, with access to risk capital mostly dependent on banks, with which companies establish long-term relationships. The financial system is certainly more stable and less subject to controversies, and companies, mostly family-owned, are protected by bank financing, which shields against market volatility.

However, the literature highlights how the negative relationship between CSR and the cost of equity is stronger for civil law countries. Joëla (2017), for example, emphasises how legal origin and cultural values can influence the relationship between corporate social responsibility (CSR) and the cost of equity. Common law and civil law countries (legal origin) are compared. The results suggest that companies with better CSR performance will enjoy a lower cost of equity.

On the other hand, Benlemlih and Girerd-Potin (2017) distinguish between shareholder-oriented and stakeholder-oriented countries. Initially identifying this classification with the distinction between common law and civil law countries and using a large sample of firms (1169 individual firms in 25 countries between 2001 and 2011), the authors show how Corporate Social Responsibility (CSR) significantly reduces the idiosyncratic risk of companies in civil law countries, but not in common law countries.

The effect of environmental, social, and governance (ESG) controversies on the cost of equity (COE) is even more evident regarding the mitigating role of positive ESG performances and market securities regulation. This is demonstrated by recent empirical studies such as La Rosa and Bernini, 2022 in which the authors compare negative ESG scores regarding controversies, compliance, and other negative issues. The results show how negative ESG performances, particularly environmental controversies, increase the COE, although this impact is mitigated if associated with the company's efforts to improve environmental performance. Furthermore, environmental controversies increase the COE in countries where market regulation is stronger due to greater investor expectations regarding the role of more efficient markets in controlling company controversies.

Regrettably, prior research has shown a need for more emphasis on the potential influence of shareholder activism on the extent of ESG concerns (Weick et al., 2005). Based on these contradictory findings, we hypothesize that:

H.3 The law system affects (positively or negatively) the correlation of both ESG score and controversies with the volatility of operating profitability

Purpose of the paper. The paper aims to demonstrate the existence of a direct correlation between ESG investments and controversial costs that directly affect firm performance, as well as how such a relationship is strongly influenced by the institutional diversity of regulatory and related cultural contexts.

Methodology. A statistical analysis will be conducted on a sample of companies in the energy sector based on Tobin's *Q*, that often indicates a company's investment opportunities and growth prospects. In the study context, Tobin's *Q* can influence idiosyncratic Volatility by showing the extent to which a firm is pursuing growth and expansion. Companies with higher Tobin's *Q* values might take on riskier projects, potentially affecting their idiosyncratic Volatility.

Table 2 details the independent, dependent and control variables.

Tab. 2: Variable Description

Variables	Symbol	Description
Dependent Variable		
Volatility of operating performance	Vol_OP	Volatility (σ) of Ratio EBIT / (Equity + Financial Debts)
Independent Variables		
EGS Score	ESG_S	Overall ESG Score of the company This metric quantifies the extent of a company's exposure to environmental, social, and governance controversies and adverse events, as reported in the global media.
Controversies score	CON_S	
Control Variables		
Company size	CS	Total Assets / Revenues
Liquidity	LQ	Cash / Total Assets
Revenue Growth	LR	Ln of Revenues
Tobin Q	TQ	Tobin Q value
Volatility of Revenue	Vol_RV	Volatility (σ) of Revenue

Our study assesses the influence of ESG (Environmental, Social, and Governance) and Controversies scores on the idiosyncratic Volatility of company performance within the energy sector. We aim to explore this relationship using panel data from various years and firms. The sampling period encompasses five years, from 2017 to 2022, enabling us to conduct a comprehensive and rigorous examination of the relationship between ESG and controversies scores and idiosyncratic Volatility of company performance. Data for all the study variables are extracted from the Eikon Refinitiv

database. In particular we have chosen two clusters of companies, each of fifth companies: the first belonging to the Civil law context (Italy, France, Germany and Spain), the second instead to the common law regulatory system (Australia).

Results. The findings of this study provide empirical evidence of the existence of a link between ESG performance, controversy score, and objectively measured idiosyncratic volatility in a sample of firms in the energy sector, and how ESG performance is greatly influenced by the different legal systems (common law and civil law) of the firms in the sample. In conclusion, our research has delved into the relationship between ESG (Environmental, Social, and Governance) scores, ESG controversies, and idiosyncratic risk within two legal systems. The decision to focus on firms in the energy sector has highlighted the complexity of the interactions between ESG, controversies, and the legal context, due to the substantial environmental impact and inherent social and governance challenges stemming from the sector in question. Therefore, the findings of this study provide empirical evidence of the existence of a link between ESG performance, controversy score, and objectively measured idiosyncratic volatility in a sample of companies in the energy sector, and how ESG performance is greatly influenced by the different legal systems (common law and civil law) of the firms in the sample.

Research limitations. In the research, there may be limitations of representativeness (whereby the conclusions drawn from the sample might not be applicable to the entire population) and variability in the results (with difficulty in identifying true differences or trends in the sector, as the effect of chance is more pronounced). In particular, the study exhibits limitations about the sample's narrow scope, which includes only 45 firms operating within two distinct legal systems (Civil Law and Common Law). Additionally, the number of observations made on the data from the sample's companies is limited to the last five years, and the choice of the reference sector is also a potential constraint. The investigation used a sample of companies working within the energy sector as a reference point. The research should have systematically examined the sample, considering factors such as the type involved (manufacturing and/or service) and their ownership status (public or private). Another study limitation was the failure to consider the company's affiliation with foreign corporations. Undoubtedly, this particular component has considerable importance in examining contextual effects. Consider a hypothetical scenario where a corporation functions as an international entity, engaging in operations across many industries. In such instances, the mere geographical location of a system does not inherently indicate its alignment with either the Civil Law or Common Law system.

In the future, we will consider expanding the observations by strengthening its companies' samples and data. A more advanced sampling methodology will be used. The proposed approach aims to enhance the depth of research by differentiating between service providers and energy producers within the energy sector. This differentiation will also include the distinction between public and private organizations, companies operating within a larger corporate group, and those working as separate entities. This last factor must characterize the selection of the two context samples.

Managerial implications. From a managerial point of view, the paper's output can be considered the starting point for understanding how to manage the idiosyncratic volatility arising from ESG compliance and the controversies level.

Originality of the paper. The research investigates a theme, ESG from a risk management perspective, that has been little explored in the literature. Only in recent years, due to EU regulatory pressure aimed at implementing ESG practices, has there been discussion of risk management strategies in relation to the implementation of ESG factors. For this reason, the research is new and original, embracing topics of great interest but so far little mentioned and analyzed.

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Aligning with the Sustainability Promise in ESG investing: A case study on employees ESG readiness

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Abstract

Framing of the research: ESG as an aspect of sustainable investing has been recognized as a pathway for reaching the UN Sustainability Development Goals (SDGs) and high expectations are placed on ESG investing given global sustainability challenges. ESG has been widely used as a marketing puffery which has led to regulators and other stakeholders now closely scrutinizing whether companies are living up to their ESG promises. In practice it is challenging for companies to live up to sustainability promises on the different ESG aspects. Failing to do so may harm corporate image. For an investor a sustainability promise is a commitment to focus on ESG issues in investments. Our study is inspired by promise theory: making, enabling, and keeping promises. For a company to live up to its promises, these three aspects must be aligned.

Purpose of the paper: The purpose of our study is to deepen the understanding of how investors can align with their sustainability promise and enable employees to integrate ESG in the investment work. We outline the alignment process by exploring factors that employees perceive that enable and impede alignment with the promise, and what is required to support integration in different phases of the investment process.

Methodology: The study is abductive. The qualitative action research is inspired by the Nordic School of thought and service design, which adopts a human-centered approach to development and can be applied for purposes of achieving strategic goals, such as enabling employees to align with promises. We conduct a case study in an investment firm and explore what employees experience to enhance and impend alignment. Initially we assess employees' promise readiness by a promise readiness assessment scale.

Results: Based on employees' experiences we identified factors that enhance and impend their alignment with the firm's sustainability promises. The service design inspired process encouraged employees to contextualize the overarching sustainability promise into actionable value propositions and to identify more granular tools needed for integrating value propositions into different phases of the investment process.

Managerial Implications: Alignment with sustainability promises is critical for any organization, including the investment sector. The reputation risk caused by failing to keep ESG promises has grown significantly as sustainability pledges have become commonplace in corporate communication. Therefore, alignment with the sustainability promise in different phases of the investment process requires careful consideration in a manner that enables investors to integrate the ESG aspects into their business plans. To succeed in doing so investors need an outlined alignment process, e.g., the kind that is outlined by our research.

Research limitations: Since our research is still in progress our findings are preliminary, and research on a broader basis is required. In addition, our research is conducted in Northern Europe where organizational culture may differ from the rest of Europe and the US. Thus, comparative analysis needs to be conducted between different types of investors and regions within the EU as well as globally.

Originality of the paper: Our study advances the conceptual discussion on firms' alignment with their sustainability promises in ESG investments. The results provide insights in how investors can walk-their-sustainability-talk. This is critical not only for avoiding reputation risks caused by breaking ESG promises, but also from a systemic perspective and how investors through walking-their-talk may contribute to reaching the UN SDGs.

Key words: Sustainability promises, ESG investing, Employee Alignment, Service Design, Promise readiness

Framing of the research. This paper describes a two-phased explorative, work-in-progress research on sustainable investing, focusing on employee alignment with a sustainability promise in investment work. We explore factors that enable and impede employees to aligning with the firm's sustainability promise. The first phase of the research was

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conducted in the summer and fall of 2023. The second phase of the research is work in progress and builds on the findings from the first phases of this abductive research process. The second phase focuses on exploring what tools employees perceive they need to align with the sustainability promises and what they need to maintain aligned with the promise throughout the investment process. By sustainable investing we draw on the definition by Silvola and Landau (2021:3), i.e., that "...investment decisions are based on ESG (environmental, social and governance) information that is essential for each company, in addition to traditional financial figures".

ESG investing is established as a possible pathway to reach the UN Sustainability Development Goals (SDGs) (Delgado-Ceballos et al., 2023), and investment has had an historical role in transforming the economy (Penna et al, 2023). However, currently only a fraction of the UN SDGs are on track and high expectations are placed on ESG investing given the global sustainability challenges. There is a shared agreement on that more capital must be deployed in sustainable investing to meet the UN SDGs. However, the actual increase in ESG investing is far from sufficient to meet the goals (Penna et al, 2023).

In practice, it is challenging for companies to live up to sustainability pledges on the different ESG aspects and the expectations these promises raise among different stakeholders (Kossovsky, 2021). Nonetheless, failing to do so may include non-financial risks that may harm corporate valuations. When investors fail to invest in alignment with their sustainability promises, they also contribute correspondingly less to the transformation towards a more sustainable society.

A sustainability promise is often an abstract promise of ethical action (Rasche et al., 2017, and a commitment made by a company to focus on environmental, social and governance (ESG) issues. During the past decade there has been a huge increase in sustainability-charged pledges in different sectors. For instance, large banks and institutional investors have made green pledges that when/if fulfilled "have the potential to contribute markedly to a low carbon transition" (Glomsrød and Taoyuan, 2016: ii). A promise is a psychological contract with embedded moral and ethical aspects (<https://plato.stanford.edu>) about the possible future value that its fulfilment will create for stakeholders (Grönroos, 2009). People expect that promises are kept (Vanberg, 2008). However, there are growing concerns of companies mostly "talking-the-sustainability talk" (Kaplan, 2024), i.e., not truly integrating ESG. Simultaneously, there are claims that the transition towards more sustainable growth may be supported by integrating ESG criteria into investment strategies.

An investor's overarching sustainability promise provides the broad outline for its investment work. However, to actualize the promise, employees need to contextualize the meaning of the oftentimes broad statement (Liewendahl and Heinonen, 2020). In other words, to invest in alignment with the investors' sustainability promise requires that employees understand what is meant by the promise.

Exploring alignment with sustainability promises through contextualization of it into actionable value propositions on the different aspects of ESG and into the different phases of the investment process advances our understanding of how firms can walk-their-sustainability talk. Ultimately alignment with the promises means that employees improve their ESG promise readiness. By ESG promise readiness we mean "what it takes for employees to function in alignment with the mission statement" (Liewendahl et al 2023). Readiness requires a set of abilities, including financial competences and other human assets (ibid).

As ESG lacks a common theorisation, ESG investing is complicated and complex (Pollman, 2022; Larcker et al., 2022). What ESG actually is and how it should be implemented remains unclear and diverging views exist on the purpose of what exactly ESG is aimed to solve (Larcker et al 2022). Furthermore, the varying set of standards, frameworks, metrics and rating providers' valuation methods contribute to ESG challenges when integrating ESG in practice (Pollmann, 2022; Larcker et al, 2022). Actors in the field are often concerned about risks, measurements and uncertainties relating to ESG investing (Gassmann et al, 2021). On a macro level, there exists some agreement on what ESG is trying to solve as stipulated in reporting regulations and legislation, but it remains on a high abstraction level. The regulatory and legislative efforts, such as the EU taxonomy and reporting regulation offer frameworks for large corporations and assist CEOs, boards, and CFOs in reporting (Silvola et al, 2024). The reporting should reflect the firm's strategy since ESG investing is a strategic issue (Silvola et al, 2024). However, if investors measure and report their impact only to prove it without improving their impact, it cannot be expected they will live up to their promise of making the world a better place (Roor and Maas, 2023). Moreover, the public declaration of ESG as the advocate for doing good and contributing to socio-economic transformation, does not mean it is easy to apply to practise, as there is a lack of a general readiness structure for this (Gorbunov et al, 2023).

The fact that sustainable finance and ESG investing differ from traditional investment norms complicates the firm internal alignment with the investors overarching sustainability promise. Sustainability- and ESG investing are commonly seen vehicles to create an impact while generating financial returns, i.e. through incorporating environmental, social and governance factors in the investment process (OECD report 2020, Pollmann 2022) thereby adopt a broader focus compared to traditional investment aiming at increasing shareholder profits. To align with the implications of a sustainability promise broadens the agenda to include "do good" aspects.

Duangaard and Ding (2022:17) claim that "current theories fail to offer useful insights into the disparity in ESG performance, whereas (Sheenan et al, 2023) note that one challenge to ESG performance is due to actors lacking ESG literacy. Furthermore, to achieve meaningful ESG performance firms must adopt an ESG mindset (Sheehan et al 2023). This implies that listed corporations not only need to adapt to the ESG regulations in their reporting, but also must learn to develop an ESG mindset to apply ESG in practice. Thus, one goal for alignment with the overarching sustainability promise is to create a shared and coherent ESG mindset among employees about the meaning of the sustainability promises and its operational implications. Changing mindsets involve changing perspectives and often people are fixated

with old mindsets (Chou and Tversky, 2020), which makes the creation of new mindsets troublesome, as people easily stay stuck in old habits.

Mindsets, i.e., our meaning systems, are based on attitudes and beliefs and direct our thoughts and actions (Dweck and Yeager, 2019). In addition, emotions as well as beliefs of our abilities affect our mindsets. Individuals have different mindsets about different abilities (Gunderson et al., 2017), i.e., mindsets are contextual. Mindset are distinguished into fixed and growth mindsets and affect our breath of attention and how we learn (Doerflinger and Gollwitzer, 2020; Karlen et al 2021). A growth mindset is the belief that intellectual ability can be developed (Yeager and Dweck, 2020) and a fixed mindset draws on the belief of trait-like abilities (Karlen et al, 2021). Further current research suggests a neural interplay between a growth mindset and intrinsic motivation (Ng, 2018). Yip, 2018 suggests that there is a missing link between the sustainability mindset and motivation, and Muff (2022) suggests that firms need to move from ESG risk management towards a positive impact mindset, which requires a dual mindset transformation, both on the organizational and leadership level. Malhotra and Pachauri (2022) suggest leaders must engage employees and nurture a positive mindset towards ESG and engage employees in ESG strategies by employee buy-in ESG strategies. For employees developing an ESG mindset may involve creating new attitudes, beliefs and abilities that are compatible with the implications of the sustainability promise.

Factors that may impede the potential of ESG/sustainable investing include traditional financial system as well as intermediaries that operate without ESG mindsets. For instance, Park and Lee (2024) suggest that traditional investment shareholder capitalist norms of maximizing financial returns may impede ESG investing, including abiding to fiduciary duty, managing quantifiable risks, and focusing on short term returns (Friede, 2019).

Caetano et al (2023) argue that the investment community must undergo a significant cognitive shift to recognizing the long-term importance of investing for systemic transformations in various industries, that generate both monetary and nonmonetary value. The concept of transformative investing contributes to the practises of ESG and impact investing, offering a lens for assessing investment opportunities and monitoring progress toward the system changes required to achieve a sustainable and socially just transition. (Caetano et al, 2023).

Thus, it remains for each individual firm not only to decide upon its strategy of applying the ESG philosophy of “doing good while doing well” and how to communicate about it, but consequently aligning with this promise and integrating it into the investment process. Further, incorporating ESG into practice needs to be done in a way that minimizes the risks of breaking the ESG promises. To do this the organization needs to ensure it is aligned with its “do-good” promise and its staff is enabled to live up to it. That is, its promise theory aspects, giving, keeping and enabling promises are aligned. Consequently, each organization needs to reflect upon the question of how the alignment with the promise is accomplished. This was well expressed by one of the participants in our case study, who perceived that ESG investing requires clarity on what exactly actors are trying to solve, and for whom?” Such clarification surely is relevant for many investors to explore when they aim at aligning with do-good charged promises and integrating their sustainability pledges into their investment process.

To conclude, for an organization attempting to live up to its sustainability mission and operationalize ESG investing, it means creating a firm-internal mindset that embraces the different ESG factors. This in a manner that enables the creation of a shared? mindset among the staff members, and thus enhance the firms ESG readiness. This will enable staff members to function in line with the firm’s sustainability promise and its implications in practice, i.e., in their investment work, and thus advance their ESG readiness. Seen in this light, for a firm to adopt an ESG mindset requires transformation, which requires learning, which eventually if experienced as motivating by staff members enables buy-in of the sustainability strategies. This may optimally advance the infusion of a “positive impact mindset”. Therefore, it is essential to initially identify what employees perceive impact aligning with the organizations’ sustainability promise.

We have published the results of the first part of our research in a working paper. In the first part of the study, we explored what factors impede and enable staff members to align with the investment firm’s overarching sustainability promise. In the second part of the research, we focus on a) what tools staff members perceive they need to align and to stay aligned with the sustainability promise, and b) how to integrate the sustainability promise into the investment process.

Purpose of the paper. The purpose of the paper is to describe our two-phased, explorative and abductive study on employee alignment with sustainability promises in ESG investing. The purpose of our study is to deepen the understanding of how investors can align with their sustainability promise and enable employees to integrate ESG in the investment work. By exploring factors that employees perceive that enable and impede alignment with the promise, and what in their view is required to support integration in different phases of the investment process we outline the alignment process.

Methodology. Our methodology draws upon the traditions of the Nordic School of service research (Grönroos and Gummesson, 1985; Gummerus and von Koskull, 2015). The Nordic School focuses by tradition on solving real-world problems by performing action research in case studies (Gummesson, 1988). The study is abductive and uses empirical data and theory in exploring a phenomenon (Gadde and Dubois, 2002). Its analysis is inspired by constructivist grounded theory, i.e., iteratively formulating working hypotheses and generative questions drawing (Charmaz, 2000). Grounded theory (GT) is a general analyses methodology for qualitative research aiming at developing theory that is grounded in data (Strauss and Corbin, 2007). Theoretically, our study draws upon promise theory, transformative research and research on sustainable investment. Combined and intertwined with the empirical data, our analyses contribute to promise theory and transformative service research as well as sustainable investing by advancing our understanding of

investors alignment with their sustainability promises as an aspect of integrating ESG in their investment work. The approach in our research is inspired by a co-worker orientation which draws upon co-worksip (Tengblad 2007; Andersson et al., 2020) and humanistic management that initially was introduced by Mary Parker Follett. Central to humanistic management is that it builds upon a practical ontology, co-active power sharing and integration of experiences from a wide-enough scope (Godwyn and Gittel, 2012).

In the first phase of the study, workshops and qualitative interviews were conducted throughout a 6-month long process. Employees' experiences were identified, described, and analyzed. An ESG promise readiness assessment, using Vianalyze the changes in promise readiness that transpired during the action research. The attributes that the promise readiness scale assesses are employees consciousness and understanding of the overarching sustainability promise as well as their competences and willingness to integrate the mission statement into the investment process.

By adopting a co-worksip stance the focus is on employees and their needs, when exploring factors that enable and impend the alignment with the firm's overarching sustainability promise. The research is ongoing and currently we conduct phase 2 of the study and explore what type of tools employees perceive they need to enhance alignment with the sustainability promise and integration it into the various phases of the investment process. This is done by qualitative interviews and workshops inspired by Service Desing (see e.g., Eskelinen et al, 2017; Vignoli et al, 2021).

The research questions we pose are:

1. Phase I: What impediments and enhancing factors for aligning with the overarching sustainability promise do employees experience?
2. Phase II: a) What tools do employees perceive they need to align and maintain aligned with the sustainability promise? b. What capabilities are required (in ESG investing) to advance alignment?
3. What supporting tools do employees perceive they need in the different phases of the investment process to a) create- and b) integrate actionable value propositions throughout the investment process?

The case in phase one

Our case study in phase one of the abductive, service design inspired research was conducted in an investment firm in Northern Europe. The firm strives to invest in targets with a credible ESG (environmental, social and governance) strategy. Responsibility is the firm's strategic star and a prerequisite for long-term value creation.

The case organisation had successfully been working with its sustainability mission for quite a while. By participating in our action research, the firm wanted to further advance the integration of its suitability promise and advance on operationalization of the practical implications of the sustainability promise. The specific goal was to advance the contextualization of the promise while simultaneously contributing to research that aims at developing an outline for a firm-internal promise alignment process that can benefit other similar organizations.

Phase two of the study

In phase two we continue the findings from phase 1 and the generative questions that emerged during the research. The generative questions draw upon the empirical material as well as the other current relevant research findings that advance our understanding of the phenomenon explored. In line with service design principles used in phase one of the study, we do in phase two of the study focus on the second part of the SD double diamond process, creating and testing tools for solving the challenges identified in phase one of the study. Hence, as the question of what abilities are required for integrating the sustainability promise into the investment process, is a relevant question that has not yet been replied by current research. Hence our research continues in an abductive manner, by exploring both empirically and by using literature as another informant, to answer this question.

Generally, alignment with promise requires a long-term focus (Grönroos, 2009), and an out-side in focus (Grönroos, 2017) i.e., living up to value expectations evoked by promises on a relational base. A long-term perspective is beneficial in ESG investing context alike (Silvola and Landau, 2021). In this light it is relevant to focus on alignment by contextualizing the overarching promise into actionable value propositions throughout the investment process. To do so we explore the creation and integration of actionable value proporeteins at various phases of the investment process, i.e., alignment tools and in addition tools that help employees to maintain aligned with the sustainability process throughout the investment process.

To answer research question 3, i.e.: What supporting tools do employees perceive they need in the different phases of the investment process to a) create- and b) integrate actionable value propositions throughout the process?

Initially draw upon the framework by Agrawal and Jespersen, (2023) i.e., 1) The Context: social and economic conditions, stakeholders and founding principles, 2) Investment focus, 3) venture analysis, 4) decision making and 5) decision point to outline the ESG investment process.

Results. The data we have acquired and analysed so far in our research contribute with insights in factors that impede and enhance the alignment with the overarching sustainability promises and cues on how to proceed in our exploration as stated in research questions 2 and 3. The results from phase one are discussed regarding the readiness assessment and factors that enhance and impend alignment with the sustainability promise.

The readiness assessment and factors that enhance alignment with the sustainability promise

To answer research question one, i.e., what enables and what impedes alignment with the sustainability promise we initially conducted a promise readiness assessment to calibrate the current ESG readiness state in our case firm. This

scale assesses readiness regarding 4 different ESG readiness attributes on a 7-point Likert scale. The assessment also includes open-end questions.

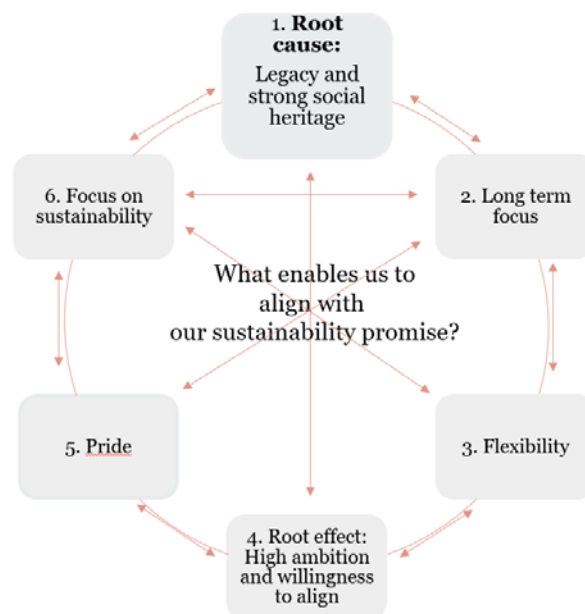
For the case firm the results were excellent, and the results were supported by the open-end questions. Out of the explored attributes we found that one aspect that in general may advance ESG readiness is focusing on exploring, establishing, and reinforcing capabilities required in ESG investing. As current research shows ESG investing may require other than traditional analytical skills of employees. and what these may have not yet to the best of our knowledge been explored and defined on a detailed level. This initial finding opens up for interesting questions to explore in more depth and guide us in phase two of our study.

During phase one of our study, we identified the following factors that enhance employee alignment with the overarching sustainability promise: 1) Legacy and strong social heritage, 2) A long-term focus (in investments), 3) Flexibility, 4) High ambition and willingness to align and live up to the sustainability promise statement, 5) Pride and 6) A strong focus on sustainability. All these identified factors were found to facilitate employees in aligning with the promises and correspondingly supporting them in their work. For instance, the perception that sustainability is an inherent legacy and heritage and an operational value for the firm, may in itself gear ESG investing forward. Factor 2, a long-term focus is in line with current literature on sustainable investing that advocate a long-term perspective in ESG investing (see e.g. Silvola and Landau, 2021). In our case employees perceived that long-term focus as beneficial as it broadens opportunities to function in alignment with the sustainability-charged promise.

To adopt a systemic view on the factors that enhance employee alignment with the sustainability promise we conducted a constellation analyses. That is, we depicted the identified factors as elements in a constellation, as depicted below. We analyzed the relationship between these in relation to one of the generative questions: What enables us to align with our sustainability promise?

A constellation analysis as done in our study facilitates

Figure 1. Constellation analyses on findings from phase 1 acknowledging the systemic workings in a context. The identified factors are portrayed as elements in a constellation. Analysing the factors in relation to each other advances the systemic understanding or the relationship between the factors and how these factors in this case reinforce each other. A change in any of the factors will (probably) have spill-over effects on the other factors.



Factors that may impede alignment with the sustainability promise

Based on the abductive analyses in the first phase of our research we found that the following factors may impede alignment with the sustainability promises: Insufficient contextualization of the overarching sustainability promise, b) not well-defined ESG criteria to support investments, and c) insufficiently integrated value propositions into the investment process.

Based on these findings the research is now in progress and proceeds into its second phase. Our methodology is the same as in phase one but in phase two we focus on the 3rd and 4th phases of the service design process and consequently focus on creating tools that support the alignment as posed by the research questions. We also explore specific competencies and capabilities required for integrating actionable value propositions in ESG investment. Our initial findings are supported by other researchers. For instance, Leins (2000) argues that analysts need to develop skills for creating imaginaries and narratives about possible future in financial market development.

Through our abductive exploration we found that one major issue related to ESG investing and aligning with an sustainability charged promises is the current conceptual confusion. A variety of views on the financial aspect of ESG and the implementation of ESG co-exist (e.g., Sciarelli et al., 2021; Cappucci, 2018), and these are not necessarily congruent, even if most researchers and a growing number of practitioners agree that ESG investing can impact communities wellbeing and protect the environment (Gangi et al., 2021). But concerning employee alignment with overarching sustainability pledges, the theory on sustainability and ESG investing offers scant support. Aldowaisi et al (2022) found that only a few researchers have focused on exploring how to integrate ESG factors into business models. But as Malhotra and Pachauri's (2023:38) claim "ESG has emerged as a key factor in engaging today's workforce." Consequently, other literature streams may offer support in outlining this specific aspect of integrating ESG into the business plan and investment process.

Our case study shows that when aiming to create a firm internal ESG mindset and aligning investment work with the overarching sustainability promise contextualising the promise into more specific, detailed, and actionable value propositions is essential. However, this is not sufficient as such. As our generative questions reveal the fit of the actionable value propositions need to be explored in more detail and related to the different phases of the investment process.

During the first phase of our study, we identified factors the enhance and impede alignment with the sustainability promises. Throughout the research we formed generative questions that advance our research and guide the second phase of it. Our initial findings suggest that when considering alignment in terms of tools that support employees to align and stay align as well as integrating the promise into the investment process a systemic approach is required. Based on our current understanding integrating the sustainability promise into the investment process and considering ESG aspect throughout, brings in a circular back-and forth movement throughout the process.

We applied the idea of bottom-up strategizing which means seeking strategic input from other than managers (Liewendahl and Heinonen, 2020). This seems to be beneficial in alignment in general regardless of sector, and advances alignment also in investment work. Utilising service-design inspired methods in the alignment process enables contextualizing overarching promises into more specific, actionable value propositions with input from employees. This seems relevant when exploring the integration of the sustainability promise on a more granular level into the investment process as the next phase of alignment. Moreover, this seems logical because employees are to apply the value propositions in the operations, and by contributing to the creation of the value propositions employees gain ownership or and proximity to value propositions. Consequently, the propositions authentically articulate the tangible value that employees contribute to creating in practice. This way, the promised value aligns more closely with the reality of employees, accurately reflecting what they need to do in practice.

Based on our abductive analyses, we can conclude that there seems to be a consensus among researchers that sustainable investments can be challenging to operationalize in practice. This may be due to the confusing use and plethora of concepts, and that the operational aspects lack structural readiness, e.g., readiness to align with ESG promises. Some remedy is offered for listed companies that must apply required reporting standards (Silvola et al 2024), but nevertheless the investment sector currently faces significant changes and uncertainties in its transformation towards sustainable investing (Welch and Yoon, 2022). For some, ESG investing may imply major, and even somewhat diffuse adjustments in operations. Consequently, employees may face novel situations and uncertain requirements in their investment work, and we hope our research offers a remedy on this aspect.

Research limitations. Since our research is still in progress our findings are preliminary and research on a broader basis is required. In addition, our research is conducted in Northern Europe where organizational culture may differ from the rest of Europe and the US. Thus, comparative analysis needs to be conducted between different types of investors and regions within the EU as well as globally. Further readiness assessments using the ESG readiness assessment scale need to be conducted in order to make generalizable conclusions on factors that impend and enhance alignment with sustainability promises and outline a more generally applicable alignment process.

Managerial implications. Alignment with sustainability promises in ESG investing is critical for investment firms who strive to uphold the promised value to their stakeholders and to avoid reputation risk. The reputation risk caused by failing to keep ESG promises has grown significantly as the sustainability pledges have become common in company communication. Therefore, alignment with the sustainability promise in different phases of the investment process requires careful consideration. Specifically, for staff members that have not previously been involved in the firm's official communication design the integration of the sustainability promise in different phases of practical investment work may be challenging. How and when a promise is contextualized into actionable value propositions on a granular level that enables integration of the ESG aspects in each phase of the investment process alignment with the sustainability mission statement is advanced and the firm's promise readiness is improved.

To conclude, alignment with the sustainability mission is a tedious and challenging process. By contextualizing the mission statement into actionable value propositions and fitting these into each phase of the investment process advances the creation of a coherent ESG mind-set which in turn advances the firms ESG promise readiness. Inspiration for the alignment work is found in the process we have outlined based on our case study. However, it seems reasonable to argue that every investor faces different challenges that correlate to their sustainability promises and their applicability in terms of broadness.

Originality of the paper. Our paper advances the conceptual discussion on firms' alignment with their sustainability promises in ESG investing and provides insights in how investors can walk-their-sustainability-talk. This approach to exploring ESG investing is scant and is in its early phase. Insight in alignment with sustainability promises is critical not

only to avoid reputation risks caused by breaking ESG promises, but also from a systemic perspective and how investors through walking-their-talk may contribute to reaching the UN SDGs.

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Food Waste and Out-of-Home Consumption Patterns: Unravelling the Actual Consumption Behavior of Food Taken Away and Consumed at Home

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MENGTING YU⁵

Abstract

Reducing food loss and waste (FLW) is crucial to ensure more sustainable food systems. A growing body of literature has discussed the use of food-sharing platforms and the practice of taking home leftovers after dining out as a viable approach to mitigate the phenomenon. However, a critical gap persists as none of these studies systematically assess the actual consumption of this food at home and its correlation with post-consumption waste. This study bridges this gap by leveraging primary data from an innovative application to quantify FW generated both out-of-home and brought-home. Indeed, it specifically focuses on two distinct types of FW: surplus food sold by restaurants to consumers and leftovers taken away by consumers. Drawing from the experiences of 574 respondents, the results reveal an 88.2% FW volume saved, affirming the potential of food-sharing platforms and the use of doggy bags in mitigating FW. Additionally, significant variations of consumer FW patterns, in terms of dining preference and socio-demographics, are captured in the comparative study on the generation of the two types of FW. For instance, both groups emphasize a notable pattern of high FW associated with single diners and the consumption of the first main dishes; while, in terms of demographics, in accordance with the literature, the findings reveal that younger consumers are more inclined to waste food than older ones. In summary, this study makes a substantial contribution to the theoretical and practical framework for measuring and tracking the actual consumption of out-of-home food brought home, unveiling intricate correlations with post-consumption waste and providing a deeper understanding of consumer perspectives on FW behavior. These insights are essential for developing targeted and engaging consumer-centric FW mitigation practices.

Keywords: food waste, sustainability, food sharing app, post-consumption waste, doggy bag; food waste management.

Framing of the research. *FLW is one of the main obstacles to transitioning to sustainable and circular food systems. Although FLW is generated at various points in the food supply chain, most occur during the final stages. Indeed, 931 million tonnes of FW were generated from retail to consumption levels in 2019. Of this, households contributed 61% and food services contributed 26% (UNEP, 2021). Consequently, the need to prevent and mitigate FW in these contexts has become a key priority both from a scientific and practical standpoint (Principato et al., 2021; Dhir et al., 2020; Filimonau et al., 2022; Principato et al., 2018; Talwar et al., 2023).*

In response to this urgency, efforts to minimize FLW has led to the development of digital technologies and new business models (UNEP, 2021), such as the food-sharing and redistribution business models challenge (Ottolenghi et al., 2022; Michelini et al., 2020). Moreover, in the realm of food left by consumers after being served, previous studies indicate that the use of takeaway boxes (commonly known as doggy bags) could be a viable solution to reduce FW (Secondi et al., 2020; Principato et al., 2021; Talwar et al., 2021).

Although FW within the food service context has recently become a focal point for researchers, there is a limited number of studies focusing on consumer behavior related to FW in out-of-home dining (Talwer et al., 2023). Some studies have investigated consumers' values and behaviors when dining out, shedding light on aspects such as pro-environmental behavior and attitudes toward waste reduction (Filimonau et al., 2020; Kim and Hall, 2019), while others have shifted their research focus to a previously unexplored aspect: leftovers and the use of doggy bags (Talwer et al., 2023; Dagiliute and Musteikyte, 2019; Stöckli et al., 2018). However, these have predominantly focused on the decision-making process

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(Dagiliute and Musteikyte, 2019; Miroso et al., 2018) rather than delving into what happens at the post-consumption stage, particularly when leftovers are taken home. Besides this, although food-sharing platforms and the use of doggy bags have been widely acknowledged as effective tools to mitigate FW within food service establishments, there remains a significant gap in understanding whether the food brought home through these methods is consumed (Talwar et al., 2021; 2023) and how certain variables are related to this post-consumption waste. Therefore, a more comprehensive examination of how these solutions contribute to minimizing FW is necessary.

Purpose of the paper. This study aims to fill the existing research gaps by gathering primary data via the Regusto innovation, focusing on FW generated out-of-home and brought home, while also examining the functionality of the Regusto innovation. Two types of FW are considered: surplus generated by the restaurant and sold to consumers using a food-sharing platform, namely the Regusto app; and leftovers from consumers' takeaways using a doggy bag, namely the Regusto bag. Based on such premises, the following research question has been investigated: Can food-sharing platforms be deemed as an effective solution for reducing FW? Is there any quantitative analysis to support this claim?

Methodology. The present research examines the potential of two types of Regusto innovation, namely Regusto app and Regusto bag, in addressing the FW problem. The Regusto app allows consumers to buy meals at reduced prices from restaurants. Here, at the time of collection, the meals are stored in the Regusto Bag, a box that redefines the traditional concept of take-out and doggy bags. During the research, the Regusto Bag was used not only to take away meals bought by consumers but also to carry away leftovers generated by consumers in restaurants. To track FW related to leftovers or surplus meals placed in the REGUSTO Bag, a QR code linked to a specific customer survey was implemented. This QR code facilitated the monitoring of FW resulting from the food taken home using the Regusto Bag.

All data was collected through the utilization of the QR code inserted into the Regusto bags, which were used for takeaway activities by the consumers. By scanning the QR code with a smartphone, consumers would be invited to complete the questionnaire. In the questionnaire, participants were asked to provide information both before and after consuming meals from the Regusto bag. This process involved participants reporting their estimated food consumption in grams and indicating the time taken to consume the food from the Regusto bag. This data collection process aimed to gather insights into food wastage patterns and to evaluate the effectiveness of the Regusto innovation. In addition, participants were given the option to upload photos showcasing any unconsumed food items. This visual input allowed for a direct comparison of the food consumption proportions attributed to the use of Regusto bags.

Data entries were collected during the summer (May to September) and winter seasons (November to January) of 2022 and 2023 among 6 participating restaurants, which differentiate themselves in various business types (burger, pizzeria, restaurant, etc) and with different food type offerings and business models. Out of these food outlets, two offer dine-in services exclusively, while the others provide takeaway services as well. Food types are mainly categorized as first main dish, second main dish, pizza, sandwich, side dish, dessert, and others. All three main meals and an additional aperitif are available throughout the day. A total of 574 observations formed the base sample for subsequent analysis after necessary data cleaning and correction. Consumers' out-of-home dining activities were described with by-event factors such as transportation methods and weekdays. Purposes of using Regusto bags, food quantity in doggy bags (in grams), food consumption time, number of consumers, and reasons for leaving some food wasted, were acquired to enrich consumers' post-consumption patterns following the use of Regusto doggy bags. The survey sample covered a wide range of residential areas, including 23 distinct cities across 7 regions in Italy. The survey also considered demographic features such as gender, age, profession, education, income, area of residence, and family status. Household FW disposal methods were included as a proxy for FW behaviour. Via the survey, we have invited consumers to self-assess the potential economic benefit of the use of the Regusto App.

The final dataset identified 4 food consumption levels with the question "How much food is not consumed and remains after using the doggy bag?". The answers were further transformed to the percentages of food consumption in a doggy bag (0%, 50%, 75%, and 100%) with the variable of the total volume of food in a doggy bag. 417 out of 547 respondents (72.65%) reported zero waste after using the doggy bags followed by the post-consumption FW percentages of 25%, 50%, and 100% (Table 2). Similarly, a high zero waste existed in the sub-groups, of which the doggy bags were used for saving meal leftovers and takeaway meals made with food surplus, 68.57% and 72.91% respectively. Given this fact and the relatively small sample size, a Binary Logistic Regression Model was implemented after defining consumers' FW patterns at the post-consumption stage (0 = a certain level of food wasted, 1 = zero food waste) as the final target variable.

On the other hand, our dataset was divided into two major respondent groups according to the survey question "With what purpose do you use the Regusto bag, meal takeaway or meal leftover at the restaurant?". Meal takeaway represented the takeaway food orders placed by the consumers on the Regusto app which listed meal offers prepared with food surplus by the participating restaurants; meal leftovers indicated the clients' plate waste after their dining experience at the participating restaurants. FW quantification and description analysis were carried out separately and comparatively to reflect the potential difference in the FW patterns and behaviours between the two groups.

Results. Among 574 respondents, 35 consumers (6.1%) used Regusto bags to save their meal leftovers after dining out (Group M), and the remaining 539 (93.9%) were Regusto App users and ordered takeaway meals that were prepared with surplus food by the participating restaurants (Group T). 262,343 grams of food were taken with Regusto bags. FW percentage at the post-consumption stage was 23.6% for Group M and 11.4% for Group T, furthermore, respondents who reported wasting all food in Regusto bags in Group M reached 8.6% - a much higher percentage than Group T. 19.7% of the respondents shared their reasons for wasting food from the Regusto bags. 10% of those respondents from Group M shared that the changed taste of meal leftovers prevented their further consumption, meanwhile, in Group T, this was not reflected.

In Group M, 82.85% of respondents used Regusto bags to save their meal leftovers from restaurants, with 65.7% using them for lunches. The majority preferred to take home the leftovers from their first main course and expressed a dislike for using public buses. Consumers in Group M were mature (54.3% aged between 39 to 65 years) with a high proportion of people (45.7%) with an individual income of more than 1500 euros per month. Cost-saving was highly recognized as a value of Regusto bags in this group (avg. = 8.97). In comparison, Group T were not frequent clients of restaurants, meanwhile they ordered more for dinners (64.75%) and used public buses sometimes. Dessert and sandwiches were popular in Group T, but not the first main. Demographically, Group T was younger (10.4% aged between 39 to 51 years) with less income. Organic waste bins and home composting were popular in this group.

Consistent FW patterns examined with high FW rates and quantities existed in sub-segments who walked to the restaurants during dinner time or could not finish the first main dishes in Group M. The waste rate of the mentioned segments ranged from 19% to 42% approximately. Only restaurant clients used Regusto bags to take meal leftovers for further consumption. Single diners contributed the highest FW volume (83.4%), but a large dining group (4 to 6 persons) reported the highest waste rate (25%). In a week, Saturday and Monday shared a high FW rate (27.3% and 25%), meanwhile, Saturdays contributed the highest wasted food amount (73.6%). In Group T, only the different FW quantities by categories were noted. The pattern of high FW amount was captured in the consumer segments who drove to the restaurants for dinners, dined without companions, or tried to consume the food leftover within 1 day. FW volume of these categories contributed from 63% to 83% to the overall measure. First main dishes exhibited the highest waste rate (19.3%), although the waste amount was much lower than other types.

The results of post-consumption FW rates and quantities were mostly consistent in Group M. Respondents who reported high FW patterns were mostly males, aged between 13-25 years, living in small to medium towns or cities, with a lower educational background (up to short-cycle tertiary education), or from a small family (2 to 4 persons). Attention was especially drawn to students who reported a high FW rate (46.4%). Both low-income (less than 1000 euros per month) and high-income groups (more than 2000 euros per month) reported a relatively high FW rate (38.5% and 25% respectively). FW volumes measured were diverse in Group T. Consumers who left more food wasted were mostly females, had permanent jobs, held a Bachelor's or Master's educational background, had an income level between 500 to 1500 euros, or were from a small family (2 to 4 persons) no matter with children or not. The FW volume proportion out of the total by these segments ranged from 32% to 91%. Special attention was paid to individuals from small families or who had an income from 500 to 1500 euros, as very high FW quantities were reported in these two sub-groups (91.5% and 67.4% out of the total FW volume). Seniors in this group (39-51 years) held a higher FW rate (27.7%) but the slightly younger age group (26-38 years) contributed the highest FW quantity measured in grams which was more than half of the total reported by this group. Group M and Group T did not show significant divergence in FW behaviours and perception of FW mitigation – unlike the results obtained from dining scenarios and demographics. Regarding waste disposal methods, respondents in Group M, who do home composting, wasted the most (50% of FW rate); meanwhile, in Group T, respondents who throw away their household FW in organic waste bins and for home composting reported the higher FW rates (13.4% and 12.2% respectively). In both groups, people who held a neutral-to-positive opinion towards the cost-saving benefit of the Regusto App reported a higher FW rate (24% to 35.7%).

Despite the small sample size of Group M, we carried out an ANOVA test on the percentage of the final food consumption between the two groups, however, no significant difference was shown ($p=0.37$). The regression model was implemented only in Group T. In the group of explanatory variables relevant to dining scenarios, dining with companions influences the post-consumption strongly and positively ($p<0.005$; $OR>13$). The first main dish and sandwiches are negatively and weakly relevant to post-consumption ($OR<0.3$; $p<0.05$); a similar result was observed for Tuesdays, and the amount of food ordered and taken away by Regusto bags. Consumers who took public buses to the restaurants tended to consume their food leftovers at the post-consumption stage ($OR=2.56$; $p<0.05$). Demographically, despite weak results regarding profession and education, a relatively strong and positive correlation was only displayed by the senior age (39-51 years) with post-consumption ($OR=2.22$; $p<0.05$) – a result contrary to the descriptive analysis. People with permanent jobs or self-owned businesses, and who are students, are less likely to finish the food although the correlation is relatively weak ($OR<0.5$; $p<0.1$). Education level reaching PhD or equivalent negatively correlated to the consumption of food ($OR=0.56$; $p<0.05$). Additionally, consumers with children are more likely to waste food ($OR=0.48$; $p<0.05$). In the assessment of FW behaviours and perception of FW mitigation, organic waste bins, waste bins, and low ratings of cost-saving (rate=1) are positively related to post-consumption. However, the cost saved in euros has no significant influence on the final post-consumption. McFadden's R squared is one of the most common and simple tests to assess the robustness of the logistic regression model. We achieved a value of 0.43 which passed the test with moderate approval. Then, we plotted the ROC (Receiver Operating Characteristic) curve to evaluate the model accuracy (Goodness of Fit in Logistic Regression, McGill University). A large proportion of the area under this curve (AUC) indicates a good overall fitness of the model with an AUC score of more than 80%. Therefore, we conclude a proper explanatory power and estimation accuracy of our model.

Research limitations. Some limitations exist within the scope of this research that should be acknowledged. First and foremost, the study's sample size of 574 respondents, while providing valuable insights, may not be fully representative of the diverse population engaging in out-of-home dining and utilizing food-sharing platforms. Secondly, the geographical focus on Central Italy in this study may restrict the applicability of the findings to other regions with potentially different cultural, economic, and social dynamics. The study's reliance on self-reported data from respondents

introduces the possibility of social desirability bias and memory recall issues. Respondents may provide answers that align with perceived socially desirable behaviors, and the accuracy of their recollection of FW-related incidents might be influenced by various factors, potentially leading to a level of response bias. Furthermore, the study primarily focuses on the Regusto app and Regusto bags, and while they are illustrative examples, the generalizability of the findings to other food-sharing platforms and doggy bag practices may be limited. Further research is needed to address limitations in sample size and explore more accurate post-consumption data. As AI and machine learning technologies continue to advance, researchers may have the opportunity to assess more accurate post-consumption data.

Managerial implications. The findings of this study have important managerial implications for stakeholders in the food industry, particularly restaurants and policymakers aiming to address FLW. Firstly, the results highlight the potential of food-sharing platforms and the use of doggy bags in mitigating FLW. For restaurant managers, the adoption of digital technologies such as food-sharing platforms can contribute to sustainability goals and also generate additional revenue.

The study underscores different levels of consumer engagement and the effectiveness of FW reduction concerning meal leftover takeaway and surplus food takeaway. There is no one strategy for all - different takeaway intentions and types of food must be considered when designing the strategies to encourage the practice of consumer FW reduction. For instance, when addressing the change in taste of leftovers, it is important to provide information on food preservation, recooking tips, and recipes. More transparent and effective communication about availability, quality, and types of surplus food by restaurants might further decrease the post-consumption waste by consumers. Furthermore, the insights into variations in consumer behaviours and FW patterns based on dining preferences and demographics provide valuable information for targeted interventions. Restaurant managers can tailor their approaches to different consumer segments and dining scenarios, such as single diners, younger consumers or small families, to further foster a culture that values minimizing post-consumption waste. Furthermore, the correlation between the perceived cost-saving benefits of Regusto and reduced food wastage suggests that emphasizing economic incentives can be an effective strategy for engaging consumers in FW mitigation practices.

Originality of the paper. The originality of this paper lies in its comprehensive approach to addressing the issue of FLW within the context of out-of-home dining and the use of food-sharing platforms. While existing literature discusses the role of food-sharing platforms and the practice of taking home leftovers, this study goes beyond by systematically assessing the actual consumption of acquired food at home and its correlation with post-consumption waste. Furthermore, this study contributes to the literature in mainly two aspects. Firstly, through the Regusto innovation it gathers primary data specifically focusing on FLW generated in both out-of-home and brought-home dining scenarios. The latter, considered a post-consumption measurement, introduces fresh insights for evaluating the effectiveness of FLW mitigation methods. Secondly, the inclusion of micro-level and territory-level data from the Regusto case study addresses a gap in the analysis of consumer profiles, providing valuable insights for targeted interventions in food waste mitigation practices.

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The role of Paradox mindset on the intention to implement Industrial Symbiosis: linking Paradox Theory and Theory of Planned Behavior

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Abstract

This study aims to investigate the role of operational managers' paradox mindset in the intention to implement Industrial Symbiosis (IS) solutions within European manufacturing organizations. The transition to circular business models offers opportunities for optimizing resource and waste management. However, despite the potential for sustainability, the adoption of circular economy (CE) practices has been limited. Many studies have identified barriers to CE implementation, including internal-individual obstacles such as perceived operational disruptions and risk aversion. Operational managers play a crucial role in navigating these tensions, but the lack of their intention to adopt IS remains unexplained. Paradox theory offers insights into individual-level barriers, emphasizing tensions between seemingly conflicting yet interrelated aspects.

Through a cross-sectional questionnaire survey with 400 European operational managers in the manufacturing sectors, the study clarifies the relationships between paradox mindset, leadership support, and intention to implement IS solutions., examining the mediating role of attitudes, subjective norms, and perceived behavioral control. Additionally, it introduces the concept of paradoxical leadership as an antecedent to operational managers' paradox mindset, promoting a culture supportive of managing contradictory demands.

Expected results will contribute to understanding the role of individual-level factors in organizational sustainability transition assuming a paradoxical perspective.

Key words: *paradox theory, theory of planned behavior, paradox mindset, intention, individual level, industrial symbiosis.*

Framing of the research and Purpose of the paper. *When organizations engage in Industrial Symbiosis (IS), i.e., changing from conventional linear business models to circular business models (Baldassarre et al., 2019), they exploit the full potential of inter-organizational resource and waste management. However, despite its potential to transform businesses into more sustainable ones, the uptake of circular economy (CE) is slow so far (Ghisellini et al., 2016; De Angelis, 2020). Many studies have tried to explain this discrepancy by identifying barriers to CE implementation, focusing both on external-collective barriers (e.g., market and regulatory barriers) and internal-individual barriers (e.g., perceived disruption of operational streams, risk aversion and lack of expertise) (De Jesus and Mendonça, 2018; Herczeg et al., 2018).*

Because the implementation of IS solutions (i.e., CE solutions between organizations) needs some structural and behavioural changes within the involved organisations, decision-making tensions between new and habitual actions arise. Typically, operational managers are confronted with navigating these tensions while implementing IS solutions within organizations (Golev et al., 2015). In their role, operational managers need to pursue seemingly contradicting roles, as they implement IS solution in an otherwise XYZ-driven organization. While previous research found that operational managers need to navigate the internal-individual barriers to implement IS, it cannot explain the lack of operational managers' intention to adopt IS within companies (Golev et al., 2015).

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Paradox theory might explain such individual-level barriers in implementing IS solutions (e.g., Daddi et al., 2019; De Angelis, 2020), as it focuses on tensions between aspects apparently in contrast, but also in synergy with each other (Smith and Lewis, 2011). Therefore, by applying a cross-sectional study design with 400 European operational managers and building on the theory of planned behaviour (TPB), we analyse how operational managers' individual level of acceptance and energization by tensions (Miron-Spektor et al., 2017) (i.e., paradox mindset) influences the intention to implement IS solutions by the operational managers. The study analyses the role of attitudes, subjective norms, and perceived behavioural control as mediators between paradox mindset and the intention to implement IS solutions. Moreover, to analyse quantitatively how the organisation could support workers in developing a paradox mindset, this study introduces the variable paradoxical leadership as an antecedent to the operational managers' paradox mindset by creating a supportive culture that encourages and rewards the ability to manage contradictory demand (Boemelburg et al., 2020; Yin, 2022).

Theoretical background and Hypothesis development

Paradoxical tensions and IS

Because IS requires the adoption of novelties in the organisation, it could elicit both learning tensions, defined as "tensions between building upon and destroying the past to create the future" and learning-belonging tensions, defined as "conflicts between the need for adaptation and change and the desire to retain an ordered sense of self and purpose" (Smith and Lewis, 2011). Difficulties in adopting CE within organisations have been recently interpreted from a paradox theory perspective (Daddi et al., 2019; De Angelis, 2020). Regarding IS, only Schlüter et al. (2022) started to illustrate some paradoxical tensions but linked them to the tasks of IS facilitators. Implementing IS solutions makes companies complement incoming by-product streams with original raw materials (Bain et al., 2010) and this requires support from upper and intermediate management for its successful employment (Golev et al., 2015; Taqi et al., 2022). Therefore, structural changes within the involved organisations can be necessary and decision-making tensions between new and habitual actions can appear. Specifically, the adoption of IS solutions can influence previous operational streams (e.g., inventory management, purchasing of raw materials and planning of production with multiple material sources) (Frohlich and Westbrook, 2001; Vachon and Klassen, 2007; Herczeg et al., 2018), taking operational managers feeling tensions between the need of implementing something new and useful to achieve more environmentally friendly targets and their habitual way of working. Golev et al. (2015) mentioned the relevant role of operational managers in adopting IS solutions within organisations, to investigate technical solutions and synergy opportunities without disentangling how their individual characteristics toward the paradoxical tensions associated with IS can affect their intention to adopt IS within companies.

Paradox mindset and the intention to implement IS

Paradox mindset refers to "the extent to which one is accepting of and energised by tensions" and individuals who carry it tend to value, accept, and feel energised by tensions (Miron-Spektor et al., 2018). Considering the adoption of organisational novelties, innovative and habitual actions are considered in tension with each other (Miron-Spektor et al., 2011; Miron-Spektor and Erez, 2017). Scholars started to analyse how the paradox mindset motivates individuals to promote innovative solutions, when tensions between new and habitual actions can appear within the organisation (Liu et al., 2020; Liu and Zhang, 2022). However, a specific focus on the potential power of paradox mindset in influencing operational managers' intention to adopt IS within companies is still missing in literature.

Paradoxical leadership as a paradox mindset antecedent

Zhang et al. (2015) defined paradoxical leadership as "leader behaviours that are seemingly competing yet interrelated, to simultaneously and over time meet competing workplace demands". In order to analyse quantitatively the leadership support to subordinates in developing a paradox mindset, this study introduces the variable paradoxical leadership as an antecedent to paradox mindset by creating a supportive culture that encourages and rewards the ability to manage contradictory demands (Boemelburg et al., 2020). According to the recent qualitative study by Yin (2022, page number), paradoxical leadership could promote subordinates' paradox mindset "by helping them learn to face, cope, and live with tensions".

Fostering a paradoxical mindset through paradoxical leadership can help to create a culture where workers are more comfortable with paradox and better able to manage complex and ambiguous situations. Moreover, when leaders help their subordinates reduce stress and anxiety and build confidence through work practices and training, followers learn to cope with tensions. Consequently, subordinates' capacity to live with tensions can increase and they can develop the paradox mindset. Considering the context of this study, the following hypothesis about operational managers as subordinates has been defined:

H1: Paradoxical leadership is positively related to operational managers' paradox mindset.

Mediation between paradox mindset and the intention to implement IS

Having a paradox mindset can make you prone to manage complex (paradoxical) situations (Miron-Spektor et al., 2018); however, the intention should be measured, to also have a better prediction of the potential behaviour (Armitage and Conner, 2001). Furthermore, to engage in innovative and complex actions (such as IS), operational managers should hold a strong sense of agency, which is described as a desire to intentionally make things happen by means of their own actions (Ng and Lucianetti, 2016). According to the Theory of Planned Behavior (TPB), individual intention already has three antecedents, i.e., perceived behavioural control, subjective norms, and attitude (Ajzen, 1991; Armitage and Conner, 2001). This study analyses operational managers who are not taking choices just for themselves, but they have impact on the organisation through their intention. While the traditional formulation of the TPB does not explain the link between

the individual and the organisation, it has been used in many organizational settings, such as the organisational change context (e.g., Jimmieson et al., 2008), where we posit our study and the implementation of IS. Considering these aspects, the following three hypothesis have been defined:

H2: Perceived behavioural control mediates the relationship between operational managers' paradox mindset and intention to implement IS.

H3: Attitudes in IS context mediates the relationship between operational managers' paradox mindset and intention to implement IS.

H4: Subjective norms in IS context mediates the relationship between operational managers' paradox mindset and intention to implement IS.

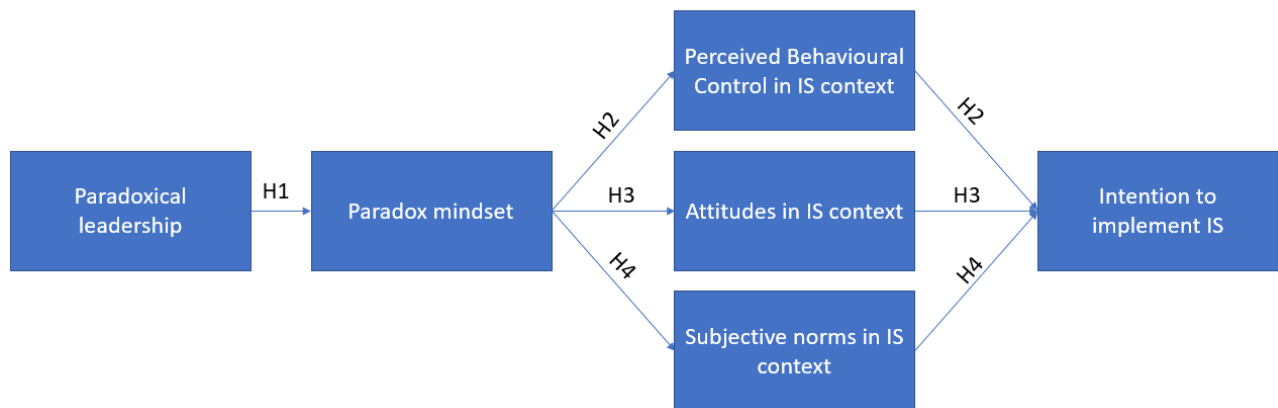
Figure 1 summarizes all the aforementioned hypotheses.

Research Methods

Drawing the coordinates

To test our hypotheses and conceptual model (see Figure 1), we employ a cross-sectional survey design. We survey top and middle level operational managers, due to their relevant decision-making role in the adoption of IS solutions within organizations (Herczeg et al., 2018; Golev et al., 2015). Sectors within the manufacturing industry (i.e., chemical, cement, pulp and paper, steel and iron, and refineries) are involved in the study, based on their high propensity of implementing IS solutions (Neves et al., 2020). The sample is drawn in the European context, specifically from the top four countries in Europe (i.e., Germany, France, Italy, Spain), in terms of market size and population (World Bank, 2023; Eurostat, 2022). Moreover, the fair variety of socio-cultural aspects within each country and between countries (Kaasa et al., 2014) makes these four countries an appropriate context for a representative research at the individual level. The survey was designed based on an extensive review to find the most reliable, acknowledged, validated scales to measure our constructs. Then, a professional service provider launched the survey, and a pre-test was conducted with 50 individuals in September 2023. This pre-test generated some improvements to the reliability of the survey instrument, boosting the clarity and readability. Furthermore, the final questionnaire was translated into the respective languages of the sample countries to ensure greater comprehensibility and a consequently higher quality of the answers. We are in the final data collection phase.

Figure 1: Conceptual model



Measurements. *Paradoxical Leadership* and *Paradox Mindset* were measured through the nine-item scales provided respectively by Sparr et al. (2022) and Miron-Spektor et al. (2018). TPB constructs (i.e., attitude, perceived behavioural control, subjective norms, and intentions) were defined from the “change-related” scale by Straatmann et al. (2017). The original items were slightly adapted to better address both the IS context (i.e., Industrial Symbiosis instead of change) and the operational managers as respondents (i.e., term company in brackets). We also added one item about the supervisor's commitment to IS processes, to outline the subjective norms linked both to the IS context and the operational managers as completely as possible. For all the scales described above, we used a Likert's response scale from 1 to 5 (i.e., from strongly disagree to strongly agree). Given the cross-sectional survey design, we adopted several procedural remedies for minimising the risk of common method variance bias and social desirability (i.e., clear sentences, no ambiguous terms or complex concepts, anonymity, and attention check) (Podsakoff et al., 2003; Cerri et al., 2019). Moreover, we decided to assess social desirability bias through the BIRD-16 scale by Hart et al. 2015. This scale allows to assess the two components of socially desirable responding: self-deception (i.e., the respondent has an overly positive impression of himself or herself and believes his or her self-reports) and impression management (i.e., the respondent consciously misreports to deceive others) (Paulhus, 1984). Furthermore, the ATCB scale by Miller and Simmering (2022) was chosen as an attitudinal marker variable to control for common method bias after the data had been gathered (Spector et al., 2019).

Expected results. The final data collection is expected to be finished at the end of March 2024 and the full data analysis will be completed in the full paper.

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Managing the business and biodiversity relationship: a Systematic Review

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VINICIO DI IORIO⁵

Abstract

In recent years, the management literature has shown a growing interest in biodiversity, leading to an increase in studies examining how companies relate to biodiversity. Although valuable, this stream of literature remains fragmented, hindering a systemic understanding of the relationship between business and biodiversity. Through a systematic literature review, we conducted an in-depth analysis of 97 articles to provide a holistic and detailed picture of the elements and dynamics underlying the relationship between business and biodiversity. To this end, the review investigates the drivers and barriers of corporate biodiversity management, types and roles of stakeholders involved, strategic approaches, and main outcomes.

Key words: *business, biodiversity, ecosystem, strategies, review, sustainability.*

Framing of the research. *The well-being of current and future generations is linked to the ability of the society to effectively address what has been identified as the greatest challenge of the 21st century: safeguarding Earth's life-support systems (Griggs et al., 2013). Addressing this challenge necessarily means putting in place actions to protect natural capital and biodiversity, which is intrinsically associated with the health of the ecosystems that sustain life on the planet (Rahman et al., 2024). Reflecting the relevance and urgency of this challenge, the United Nations has counted biodiversity loss within the concept of the Triple Planetary Crisis, along with climate change and air pollution. Framing these environmental crises within a unified concept emphasizes their interconnectedness, highlighting the complexity of environmental phenomena (Whiteman et al., 2013). Despite the (growing) recognition by international organizations, governments, and scholars of the importance of protecting natural capital, half a million species are expected to decline in the coming decades. Such catastrophic loss of biodiversity will manifest its detrimental effects directly on the health of natural ecosystems, with knock-on effects on climate change and air pollution (Panwar et al., 2023). The implications of biodiversity decline are not limited to the natural environment (or ecological system), but also fully involve the entire society (or socio-economic system), in which companies are central players and whose role deserves to be explored further. Indeed, companies rely on the ecosystem services provided by nature to carry out their activities. At the same time, by making use of the ecosystem services, they generate an impact on biodiversity and ecosystems, potentially undermining their balance. The connection between companies and biodiversity/natural ecosystems is characterized by the dual relationship of impact and dependence (Winn & Pogutz, 2013). The delineation of such relationship allows to grasp the full integration of companies within the whole socio-ecological system, showing how their activity (and anthropogenic activity more generally) presents a symbiotic link with nature.*

Despite the centrality to the Planet's balance of understanding the relationship between business and the natural environment, the dynamics underlying this relationship have often been overlooked or misinterpreted (Hoffman & Jennings, 2015). Scholars have often focused only on how companies can strategically respond to environmental challenges to gain competitive advantages, aligning mitigation actions with short-term economic benefits (Figge & Hahn, 2021). Such an approach, however, emphasizes an anthropocentric view that implies a simplistic and reductionist consideration of the complex mechanisms that link companies to the natural environment. This deficiency can be overcome by broadening the perspective of analysis through a systems approach, in order to take into account the

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intricacy and complexity of the mutual dynamics underlying the relationship between the socioeconomic and the ecological systems, and not compartmentalize the interpretation of them.

Purpose of the paper. Notwithstanding the pivotal role of biodiversity in maintaining the equilibrium of the social-ecological system, only in recent years the management literature has begun to show a more consistent interest and commitment to this issue. As a result, there has been a surge in studies aimed at investigating how companies relate to biodiversity and how they can implement strategic and operational solutions to halt or reverse its threatening trend of decline. These studies focused on diverse elements, actors, sectors, methods, and levels of analysis. However, although valuable, these contributions remain disjointed, and their fragmentation is likely to hinder a comprehensive understanding of the complex dynamics underlying the interplay between companies, biodiversity and natural ecosystems. An articulate and holistic understanding of such relationship - necessary to interpret it consistently with a systems perspective - has yet to be achieved. In order to fill this gap, we carried out a systematic literature review drawing on a multi-database search. Through a systematic literature review, we aim to conduct an in-depth analysis of 97 articles to provide an organic and articulate representation of the relationship between business and biodiversity according to a systemic view that considers the potential stakeholders involved, their roles, the types of biodiversity organizational strategies and practices, and their drivers, barriers, and outcomes.

Methodology. Following the PRISMA approach, this study conducts a systemic review of the empirical and theoretical literature on business and biodiversity.

The first publication on business strategy for biodiversity appears in 1994 and the last included in the review is published in December 2023. So, the research includes all published articles from 1994 until 2023.

This review relies on two scientific databases, Web of Science (WoS) and SCOPUS, as they are among the most commonly used, recurrent, and reliable (see, e.g., Haffar & Searcy, 2017). The search focused on titles, abstracts, and keywords fields in the WoS and SCOPUS. In order to ensure breadth in article search, the keywords included in the query were "company" or synonyms (i.e., "business", "organization" and "firm") and "biodiversity" or related elements (i.e., "ecosystem services" and "natural capital").

Only scientific papers were included in the review. The sample was limited to the subject area of "Business, Management and Accounting".

The sample was extracted in two databases (WoS and SCOPUS) twice (first in April 2023 and then in December 2023). Duplicates were deleted.

The adopted query allowed the extraction of 565 papers on business and biodiversity relationship, 513 emerged from the first round of extraction and 52 from the second.

Three exclusion criteria were applied to identify the sample:

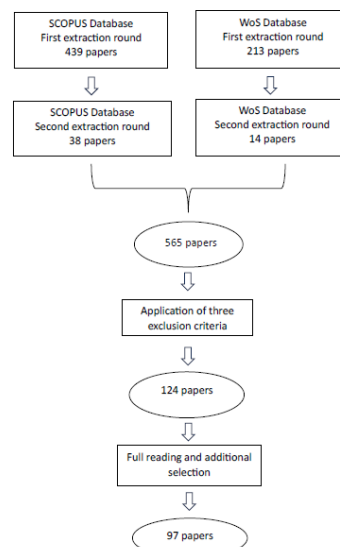
- Papers not focused on the business-biodiversity or business-natural ecosystems/natural capital relationship.
- the relationship is not concerned with one or more organizations as businesses, public organizations, and NGOs, but involving other parties as States, consumers, policy makers etc.
- Papers focused exclusively on biodiversity accounting and measurement practices.

The three exclusion criteria were applied reading title, abstract and keywords of each research. So, from the 565 articles, we select 124. We reviewed the full text of 124 articles. This left us with 97 articles.

An excel matrix included all dynamics to detect in each paper such as barrier for the strategy adoption, drivers, role of stakeholder, outcomes. Finally, we clustered similar research findings.

Figure n. 1 shows the adopted methodology to select the sample.

Figure 1 Adopted method for sample defining.



Results. *Results introduce the main preliminary finding from the literature review.*

Features of organization with a relationship with biodiversity.

The literature review shows how research mainly investigated organizations with a biodiversity relationship of impact and dependency too. They are companies that directly rely on natural resources and ecosystem services but at the same time generate an impact on them that could put the company itself at risk. This is common in studies on the forestry, food, cosmetic, mining and the many other sectors of the sample.

The review shows the prevalence of certain sectors in business and biodiversity research. Studies have involved companies from multiple sectors that discuss biodiversity in a more general manner. In many other cases, the papers investigated the biodiversity strategies linked to one specific productive sector. The most investigated are food and beverage, forestry, mining and tourism. Of the 97 articles, in fact, fourteen report practices implemented by companies in the food industry, nine in tourism, eight in forestry, and five in mining. Studies refer also to the textiles, agriculture, pharmaceuticals, cosmetic and other manufacturing sectors. Articles on forestry and mining take a whole ecosystem approach, while in articles on food and tourism, references to species numbers and types also prevail.

Stakeholders' roles in BE&ES strategies

According to a systemic perspective, the interpretation of the interplay between companies and biodiversity/natural ecosystems is not limited to the analysis of a "one-to-one" relationship, but requires the consideration of a wide range of stakeholders who may be influenced by or involved in corporate biodiversity strategies and practices. These stakeholders can be both external and internal to the companies.

External stakeholders' roles

Pressure exertors - The rapid decline in global biodiversity has heightened social pressures on companies. These pressures stem from various stakeholders. Public institutions use regulatory mechanisms to prompt corporate biodiversity action (Panwar et al., 2023), while civil society groups (e.g., NGOs and social movements) leverage media influence and activism to grant social legitimacy (Anthony et al., 2023). Supply chain actors can decide to monitor environmental performance of the supply/value chain, pushing corporate customers or suppliers to protect natural capital (Atupola et al., 2023). Consumers' preferences may influence companies towards biodiversity practices and transparency (Boiral & Heras-Saizarbitoria, 2017). Financial institutions can exert pressure by considering in their investment decisions biodiversity risks affecting corporate profitability (Boiral et al., 2018). Finally, local/indigenous people can mobilize to ensure that their rights are respected and that corporate practices that protect the natural ecosystems and biodiversity of their lands are adopted (Puppim de Oliveira et al., 2022).

Facilitators and collaborators - Certain stakeholders may facilitate corporate biodiversity strategies and practices implementation. For instance, technology providers can equip companies with devices for monitoring biodiversity and taking corrective action (White et al., 2023). Public institutions can promote ecosystem protection regulations (Feger & Mermel, 2022). Supply chain actors can share best practices and ease access to evidence (Palakshappa et al., 2023). Certification bodies encourage the adoption of biodiversity standards (Boiral et al., 2018). Industrial associations can offer guidelines for proper biodiversity management to member companies. Finally, the collaboration with experts, consultants, research centers, and local communities can provide operational input and guidance (Smith et al., 2020).

Hinderers, custodians and adversely affected groups - Corporate biodiversity protection strategies can be hindered by the activities of other actors in the socio-economic system. It happens when an integrated and systemic approach with respect to the management of natural ecosystems is lacking. Without coordination with legal frameworks, consistent and harmonious practices along the supply chain, and respectful behaviors by consumers and local populations, corporate biodiversity efforts may be ineffective (Duensing et al., 2023). At the same time, local/indigenous peoples can also take on the role of biodiversity custodians due to their deep knowledge of land peculiarities and the related management practices (Antolin-Lopez et al., 2022). Some myopic Western conservation approaches, tend to conflict with the culture, well-being, and rights of indigenous peoples, negatively affecting them (zu Ermgassen et al., 2022). Balancing corporate strategies with indigenous rights and cultural values remains crucial for effective biodiversity conservation.

Internal stakeholders' roles

Triggers - Biodiversity strategies can originate from different levels within organizations, driven by top managers, middle/operational managers, and employees/workers. Top management's environmental consciousness and understanding of the business-biodiversity relationship are crucial in initiating protection strategies, often following a "top-down" approach (Issa & Zaid, 2023). Middle managers also play a role in diffusing biodiversity practices due to the concomitance of awareness of operational impacts and decision-making authority (Boiral et al., 2019). Finally, workers, especially those "in field", directly witness corporate operations' impact on natural capital and ecosystem functionality. Their firsthand experience can compel them to advocate for biodiversity protection, fostering a "bottom-up" influence on managers and top management (Barrington, 2001).

Levers - Middle/operational managers and workers/employees, due to the more "pragmatic" characteristics of their job roles, represent key players in the conversion of corporate biodiversity strategies into concrete practices. In this

sense, they can be considered the organizational members to be leveraged to internalize, implement and apply biodiversity practices effectively in the company (zu Ermgassen et al., 2022). Therefore, initiatives like outreach and training are necessary to enhance their understanding and awareness of the relationship between business and biodiversity and their environmental/ecological knowledge, in order to stimulate compliance and proactive nature-protection behaviors (Boiral et al., 2019).

Drivers and barriers of B&ES strategies

The analysis identified four overarching categories, which synthesize enablers and barriers to B&ES strategies, discussed below.

Issue salience

Lacking understanding of B&ES poses an internal obstacle: this relates with decision-makers' ability to interpret the company's relationship with B&ES (Quarshie et al., 2021). This understanding is hindered by the intricacies of supply chains, which challenges decision-makers in evaluating impacts and dependencies occurring off-site, and accessing information from distant partners (Panwar et al., 2023). Cooperation with supply-chain partners thus emerge as an enabler of B&ES strategies (Shah et al., 2019). Political forces may serve a twofold role in reducing barriers to biodiversity management: regulations can exert coercive pressures that directly challenge companies' "license to operate", thereby forcing biodiversity management (Krause et al., 2021); political support also manifests through soft and voluntary policies (Boiral et al., 2018).

Economics and market factors

Cost pressures stem from companies' reliance on ecosystem services and natural capital, and may result from increasing costs of raw materials and inputs (D'Amato et al., 2018), and expenses associated with regulatory compliance (Krause et al., 2021). Barriers also arise from the scarcity of financial resources (Adler et al., 2018). Similarly, market opportunities and competitive advantages may drive the integration of B&ES concerns into operations: these include access to new markets or expanding existing market share (Barbosa et al., 2018). Lack of market rewards and financial support represents the flip side of this scenario: market actors may not reward companies that take proactive measures on B&ES (Ferber & Mermet, 2022), while public authorities may neglect incentivizing mechanisms (Krause et al., 2021).

Knowledge and capabilities

Numerous studies highlight how the lack of adequate knowledge and learning mechanisms impedes B&ES strategies (Smith et al., 2020). Key capabilities to measuring, monitoring and reporting B&ES aspects (Reale et al., 2018; Adler et al., 2018), as well as accounting impacts and improvement objectives that reflect a credible commitment rather than impression management (Haffar & Searcy, 2018; Zu Ermgassen et al., 2022). Technical challenges arise from the absence of recognized methods or standardized tools for biodiversity management, leading to operational uncertainties (Krause et al., 2021). This pertains to measuring impacts and dependencies on natural capital, due to limited consensus on appropriate metrics (de Silva et al., 2019).

Culture and value orientation

Studies emphasize -environmental values, ethics and organizational culture as facilitators of B&ES strategies (de Silva et al., 2019). These help mitigate resistance to change, which could otherwise undermine B&ES initiatives (Ferber & Mermet, 2022). Conversely, the lack of commitment and long-term vision, notably from top management threatens the embeddedness of B&ES concerns in corporate strategies (Macellari et al., 2018). Organizational members' awareness, personal involvement and knowledge about local biodiversity is also recognised as an enabler of a positive relation between business and biodiversity (Boiral et al., 2019).

Strategic approaches towards B&ES

The landscape of strategies to mitigate biodiversity and ecosystem services (B&ES) loss is complex and evolving. Utilizing a classification from Panwar et al. (2023), strategies like compensation, reparation, conservation, and restoration are evaluated for their commitment and long-term impact, ranging from exploitative methods to investments in B&ES conservation. Among these, conservation strategies stand out for their dominance and effectiveness.

Compensation, an initial strategy, focuses on off-site preventative measures. Thompson (2019) advocates for Payments for Ecosystem Services (PES) as exemplary corporate environmental stewardship. The goal is achieving no-net biodiversity loss (NNL) or a net-positive impact (NPI). A longitudinal analysis by de Silva et al. (2019), surveying sixty-six global companies from 2001 to 2016, found only a third maintained active NNL and NPI commitments, questioning the long-term benefits and reputation impact of these strategies.

Reparation, a reactive strategy with limited empirical backing, aims to mitigate B&ES loss through compensatory actions, like those observed in initiatives for rubber plantation diversification to address deforestation, noted by Cho et al. (2022). Despite intentions, the effectiveness of reparations is debated due to potential encouragements of monoculture practices, inadvertently reducing biodiversity.

Conservation is the primary, proactive approach, entailing direct measures by companies to protect B&ES. This is evidenced in numerous studies and initiatives worldwide, including biodiversity emphasis in Sri Lankan tea plantations (Atupola et al., 2023), the Sal de Aveiro project in Portugal for sustainable salt production (Martins et al., 2020), and

biodiversity integration in Finnish forest management (Primmer, 2011) as outlined by Reale et al. (2022), Puppim de Oliveira et al. (2022), Feger and Mermet (2022), Atupola and Gunarathne (2023). These examples demonstrate the impactful role of institutional pressures and the broad benefits of conservation in boosting company legitimacy and financial performance.

Restoration, the most forward-thinking strategy, seeks on-site B&ES recovery post-loss. Case studies, such as a New Zealand apiculture firm showcasing biodiversity and carbon negativity improvements (Salmi et al., 2023) investigating the positive effects of board gender diversity on environmental actions, highlight restoration's potential. However, restoration's benefits can be slow and variable, underlining the complexity of ecological recovery. A "non-action" approach, described by Talbot et al. (2023), suggests a wait-and-see strategy, where businesses stay passively engaged in environmental stewardship.

Supporting this comprehensive overview, stakeholder and institutional theories shed light on the intricate dynamics of B&ES strategy formulation. Stakeholder theory, as discussed by Boiral and Heras-Saizarbitoria (2017), explores the roles of various entities, including NGOs and universities, in biodiversity efforts. Institutional theory, highlighted by Nelson (2001), emphasizes the effectiveness of grassroots organizations in Victoria, Australia, in conserving local natural heritage. This blend of theories and real-world examples paints a detailed picture of the multifaceted approaches to preserving biodiversity and ecosystem services, underscoring the importance of diverse, collaborative strategies for long-term environmental sustainability.

Outcomes of B&ES strategies

Some studies generally discuss improvements and advantages for ecosystems, as well as an increase in species. Direct effects on biodiversity, often described broadly in review articles, can be distinguished from indirect effects that arise from environmental improvements or the minimization of impacts, which can indirectly benefit biodiversity. Fontana and Pisalyaput (2022) demonstrate how improving local climate conditions and preventing soil erosion can provide shelter for local wildlife.

Papers emphasize additionally outcomes fall into three main categories: economic, social, and organizational.

Concerning the economic category, profitability and competitiveness are the most detected by research. Puppim de Oliveira et al. (2022) describe the market opportunities emerged from biodiversity strategy by a Brazilian cosmetic company investing in a fair-trade label to protect local heritage. Shah et al. 2019 describe the increasing crop production and farmers' income. Other papers include social outcomes. Winn and Pogutz (2013) demonstrated as Acelor Mittal (steel) initiatives engaging directly with nature can improve the cooperation with public institutions and NGO. Among the organizational outcomes emerge the introduction of environmental risk management, the adoption of biodiversity management approach, mindset change in organizations and improving of corporate internal cooperation. Articles citing improved environmental risk management as one of the benefits of biodiversity management also include biodiversity dependence and the capability of company to face the risks (Small et al. 2022). The adoption of biodiversity management is often linked to the attainment of certifications that provide methodologies and tools adoption to manage the impact and dependence between business and biodiversity (Middendorp et al. 2020). The change in the organisation's mindset relates to an increase in knowledge about biodiversity and consequently a greater awareness of this issue. The review shows how this change starting with entrepreneurs also involves managers and all employees, supporting a better introduction of green practices and increasing their own motivation in sustainability improvement (Krause et al. 2021). Finally, biodiversity fosters internal cooperation between different competencies and areas of the organisation as cited in many papers (such as Barrington 2001).

Research limitations. *The main limitation concerns the research progress that is still ongoing. While the results have been obtained and analyzed, they need to be systematized into a coherent framework that will allow to contribute to the management literature on business and biodiversity.*

Managerial implications. *Harnessing a systemic view on the business-B&ES relationship aims at supporting decision-makers in moving away from the prevailing "business case" perspective of corporate sustainability, which often implies a too simplistic understanding of the issue, neglecting the broader ecological implications of business activities (Figge & Hahn, 2021). By reconstructing the fragmented field of studies, this research provides decision-makers with a more comprehensive framework for interpreting this multifaceted relationship of impact and dependence. The emergent framework helps managers in articulating corporate responses that look beyond impact mitigation, to consider dependencies, institutional and organizational dynamics, to foster a more sustainable relationship between business and natural capital, and address challenges of biodiversity loss and planetary health.*

Originality of the paper. *The management literature has recently shown a growing interest regarding how companies attempt to manage their relationship with biodiversity and ecosystems. However, these studies have focused on specific aspects of the relationship between business and biodiversity, making relevant but jagged contributions. The originality and contribution of the present research, therefore, lies in providing an integrated analysis of the multiplicity of elements and dynamics involved in the interplay between business and biodiversity by using a systems approach to consider its inherent complexity.*

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The role of biodiversity for business and social innovation

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Abstract

Biodiversity loss presents a serious risk for business and society. Companies can use digital technologies to offer innovative services that aim at protecting and promoting biodiversity. Moreover, a key role is also played by stakeholders, from business partners to clients and individuals, that can support the actions of a company in pursuing biodiversity goals. However, biodiversity can be seen also as a lever to improve innovation. Indeed, biodiversity can promote the innovation of business models to reach client needs as well as the social perception of this topic, affecting their role and actions in the society. In this context, culture about biodiversity represents a key factor that should be promoted to support actions. In this sense, policy-makers could play a key role. Through a multiple case studies approach, the study tries to assess the role of biodiversity taking into consideration digital technologies, stakeholders' involvement, business model and social innovation. The results of analysis (desk analysis and interviews) of three case studies considered, emphasize the double role of biodiversity as output of innovative services, and a driver for business and social innovation.

Key words: biodiversity; innovation; business model innovation; stakeholder theory; digital technologies

Framing of the research. *In the field of environmental sustainability an important issue is concerning the prevention and promotion of biodiversity (Jones and Solomon 2013), meant as “the variety of life, including variation among species and functional traits” (Cardinale et al., 2012, p. 60). New frameworks and tools are introduced to help businesses better manage, measure, and reduce their impacts on climate change, air, soil, water quality, and more recently biodiversity (Reale et al., 2019). Biodiversity loss poses serious risks to business operations, threatening resource availability, supply chains, and ecosystem services, which is has been defined as the benefits that human populations and organizations derive—directly or indirectly—from proper ecosystem functioning (Costanza et al., 1997; Whiteman et al., 2013). These risks are recognized at a global level, but further research is needed to understand business perceptions and actions regarding biodiversity in local contexts (Reade et al., 2015; Winn & Pogutz, 2013).*

Contributing to this topic, a growing number of scholars and practitioners have recently been looking at managing biodiversity issues considering the key role that stakeholders (Bronzetti et al., 2023) can have to foster ecological knowledge transfer that influences perceptions regarding biodiversity. Ecological knowledge is important in motivating operational activities aimed at preventing and/or promoting biodiversity, by innovating businesses and society. Specifically, companies and other organizations can innovate their practices. The social context is vital in influencing biodiversity culture and shaping learning about biodiversity. Stakeholders are integrated into this learning process (Smith et al., 2020).

Diversity has a key role for innovation. In the management literature, it has been found that different forms of innovation, such as gender, culture, education, background and cognitive, have a positive effect on the innovation of business processes (Mitchell, 2008; Østergaard et al., 2011), as well as the diversity of cooperation and relationships among companies and stakeholders (Vence & Trigo, 2009) affects positively the business innovativeness. In this sense, diversity for businesses is considered a driver of innovation (Hewlett et al., 2013). Moreover, diversity is relevant also for social innovation, which refers to the individuals' response to the view that economic activity has expanded with little or no regard for sustainable yields or the fragile balances in nature (Lettice & Parekh, 2010). Despite the relevance of biodiversity for humans and also business, there is a lack of studies that assess the relationship between biodiversity and innovation, in a viewpoint of “one diversity”.

In this context, companies have started to innovate their business models to include environmental, social, and economic considerations (Feger & Mermet, 2022). These sustainable business models are designed to integrate sustainability into companies to create value in not only financial, but also ecological and social domains, to adapt the firm to the changing business environment. In this regard, a key role can be played by relationships with stakeholders and with customers in terms of opportunities for value co-creation (Boiral & Heras-Saizarbitoria, 2017). According to stakeholder theory, companies and organizations must consider the interests and expectations of their various

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stakeholders, defined as “any identifiable group or individual who can affect the achievement of an organization’s objectives, or who is affected by the achievement of an organization’s objectives” (Freeman & Reed 1983, p. 91). According to this theory, organizations are not only accountable to their shareholders. Some studies have highlighted the importance of stakeholder involvement in managing complex environmental issues and promoting proactive environmental strategies (e.g., Buysse & Verbeke 2003; Cragg and Greenbaum 2002).

In addition to stakeholders, also the use of digital technologies allows to innovate business models aiming at sustainable solutions (Broccardo et al., 2023; Pichlak & Szromek, 2021). In the recent years, there has been a growing attention on how new digital technologies included in the Industry 4.0 paradigm - from big data to Internet of Things (IoT) and artificial intelligence (AI) solutions - are supporting firms and other organizations in the optimization of business processes included environmental sustainability concerns (Piccarozzi et al., 2023). In this sense, several studies aimed to assess the link and impact of Industry 4.0 in defining processes, with firms increasingly oriented towards a sustainable development (Stock et al., 2018). Hence, the literature at the intersection of Industry 4.0 and sustainability is rapidly evolving and growing to cover different areas (Piccarozzi et al., 2022). In this sense, Yadav et al. (2020) found that new technologies contribute positively to improve sustainability.

Digital technologies can serve as solutions also for facing biodiversity issues in different ways. Digital technologies can be used to offer innovative alternatives in agriculture or for regenerative or organic agriculture goals (Cumming et al., 2020), but technologies can also tackle biodiversity loss through playing a complementary role alongside existing technology, or supporting some processes (Ziegler et al., 2022). However, there is limited research exploring how digital technologies relate to biodiversity.

Purpose of the paper. Despite the relevance of biodiversity concerns for sustainability goals, there is a lack of research that investigates if and how biodiversity can support business and social innovation or can be an outcome of business and social innovation. In particular, we aim at exploring the relationship between biodiversity and innovation of business and social, by considering the role that both stakeholders and digital technologies can play. In this regard, through our study we aim at answering to the main following research questions:

RQ1: How does biodiversity affect both business and social innovation?

RQ2: How do firms/organizations involve stakeholders in biodiversity practices?

RQ3: What is the role of digital technologies in biodiversity practices?

The purpose of the study is to identify new theoretical patterns (Sabherwal & King, 1991) about the relationships between biodiversity and both business and social innovation. We attempt to answer the study’s research questions by selecting “information-rich” cases (Patton, 2015), summarizing varied or extensive raw data, establishing relationships between findings and research objectives and developing a theoretical framework based upon “the underlying structure of experiences or processes that are evident in the text data” (Thomas, 2006, p. 238).

Methodology. Because of the exploratory nature of our research, we adopted a bottom-up inductive approach (e.g. Gioia et al., 2013; Thomas, 2006) “wherein theories are formulated by drawing general inferences from particulars or cases of empirical data” (McAbee et al., 2017, p. 278). In doing so, we performed a qualitative multiple case study (Yin, 2014) using multiple material sources from in-depth interviews, to better understand the phenomenon, to secondary data extracted from companies’ websites and companies’ LinkedIn webpages. Three different companies, detailed in Table 1, have been as case studies that could allow us answering to our research questions.

Tab. 1: Case studies

Company	Founded	Size (employees)	Industry/Activity	Interviewed
Company 1	2017	Medium-sized	Technology/Technology provider; Consulting and education services	Marketing manager
Company 2	2019	Medium-sized	Food/Food delivery services; Education services	Co-founder
Company 3	2018	Medium-sized	Consulting/Innovation and technology business consulting services; Training services	Marketing manager and Agronomist

Source: Authors’ elaboration

Company 1 is a medium-sized leading nature-tech company aiming at protecting biodiversity through technology. The company’s goal is to create Europe’s largest ecological corridor, consisting of interconnected biodiversity oases, to restore 40% of global biodiversity. The honeybee is a key bioindicator that company assesses by collecting and interpreting data through innovative proprietary systems to monitor the health of bees, pollinators and their connection to ecosystems.

Company 2 is a medium-sized digital company mainly focused on food-delivery services. It’s main goal bases on the idea that delivering the “right quantity” of ingredients for the different dishes and recipes an individual chooses to eat can totally eliminate food waste and, consequently, having a positive impact on nature. Indeed, the company’s desire is to have a positive sustainable impact on the entire ecosystem to sustain nature and protect biodiversity.

Company 3 is a medium-sized tech-company that offers several consulting services for businesses and other organizations with the aims of transforming territories and industrial districts into sustainable places where safeguarding the environment by saving resources, combating climate change and valuing biodiversity.

In addition to the desk analysis of companies' website and LinkedIn web page, we interviewed managers of the three companies specializing in different activities. The interviews were conducted between December 2023 and March 2024, to explore the firms' activities adopted to prevent or promote biodiversity linked to changes occurring in global market and competitive environment they work.

Results. The evaluation of the three companies started from the desk analysis of their own website and LinkedIn page to assess what they do, in terms of activities, and how the concept of biodiversity is part of the business. A summary of the main results is reported in Table 2. Starting from the analysis of Company 1 emerges that biodiversity is the core of the business. Company born from the idea of two friends, one with a PhD in engineering and the other one with a PhD in biology, with the idea of developing a technology for beehives monitoring because they perceived a great risk. Therefore, the founders already had the intention of creating a business to reach sustainable goals. Then, the activity enlarged involving more services with the aim of bridging nature with technology. In this sense, company developed sensors and analysis tools, as well as started to offer regenerative activities that help preserve and promote biodiversity. The mission is to create a world where technology and nature work in harmony, providing innovative solutions that help protect and restore ecosystems.

Tab. 2: Main results of desk analysis

Company	Products/Services	Digital technologies
Company 1	Monitoring; Regeneration; Education; Adopting a beehive / tree / bee	IoT, Sensors, App
Company 2	Food delivery for individuals and organizations; Personalized nutrition	Digital platform
Company 3	Nature-based solutions; Local and industrial resource efficiency solutions services; Biodiversity monitoring and innovative regeneration services; Open Innovation and Venture Capital	Sensors, Satellite images

Source: Authors' elaboration

For the company, particularly important is the maintaining of a healthy balance between human activity and the natural world. For this reason, a team of experts works tirelessly to develop cutting-edge technology that can monitor, analyze, and promote the health of the environment, believing that by combining our expertise with a deep respect for the natural world, a positive impact on the planet can be achieved. The business of Company 1 bases on 3 main pillars (services): (1) the monitoring through proprietary technologies of the nature habitat health (data on pollinators, bees, flora, etc.); (2) regeneration of low-biodiversity lands, providing nectariferous species of trees and plants, selected according to the specific characteristics of the land; and (3) education programs to raise awareness of biodiversity issues among businesses and communities. Through the use of innovative technologies and the analysis of data technologies allow to collect, Company 1 aims at preventing biodiversity loss by providing different services for beekeepers/farmers/citizens. Through advanced sensors and machine learning algorithms Company 1 is able to collect and analyze large amounts of data on species populations, habitats and ecosystems then used to create the world's first comprehensive biodiversity index, providing an accurate overview of the health and diversity of planet's ecosystems. With this index, businesses, policymakers and the masses can make more informed decisions about how to protect and conserve Earth's biodiversity for future generations. Company 1 provides additional services for citizens and organizations, such as education. In this regard, through LinkedIn, Company 1 continually publishes news and information about biodiversity and a series of webinars on biodiversity topic. On company's website there is a blog and a podcast to spread the culture of biodiversity. Moreover, it offers an educational program composed by 9 modules for secondary school students, to integrate biodiversity into the school program. Finally, Company offers the possibility to "adopt" a beehive, and periodically receive honey produced by bees, a solitary bee house, perfect for garden or balcony, and a tree. In this way, collaborating with beekeepers and other actors (e.g. European Space Agency). Company 1 offers at individuals the opportunity to participate actively in pursuing biodiversity prevention and promotion, involving them and beekeepers and land owners.

Company 2 is a digital company that offers, through a digital platform, a new way of sustainable grocery shopping for the environment, the local economy and health that accompanies clients in making conscious and reasoned choices about their eating habits. The kits are provided in compostable containers of portioned, ready-to-cook ingredients that allow to save time and to have zero food waste at a sustainable cost. It offers a large variety of ingredients to assure the possibility of cooking several different recipes. In doing so, Company 2 creates synergies with host territory, various stakeholders (producers, bistros, restaurants, pick-up points, etc.) with the intention of enhancing and protecting it, as part of the same delicate ecosystem to be protected. The ecosystem consists of: a digital portal; a production/distribution center; a network of companies that cultivate, breed and produce raw materials and semi-finished products in the national territory; the users of the service. The main component of the ecosystem is the innovative technology. Through the website and app, users can do their food shopping quickly and easily, starting with recipes and receiving all ingredients at home ready for preparation, weighed and divided into compostable containers, or dishes already cooked. No food is wasted and no packaging waste is produced. The production chain is as short as possible. The rewarding mechanism is that of

planning, which makes it possible to optimize resources and thus reduce wasted time and energy, while impacting the environment less and less. In this way, Company 2 offers to individuals as well as companies an innovative, anti-waste service that can generate real change to protect “People, Work and the Planet”. In addition, to support clients, Company 2 has partnered with nutrition experts (biologist nutritionists) who will provide to clients a personalized diet plan designed on client needs. A highly personalized service, new to the market, flexible and tailor-made that favors collaborations with different several actors of food industry. Through their services, mainly focused on protect environment (short-chain/zero-kilometer products for less environmental impact; plastic-free, fully compostable containers; weighed and portioned ingredients to reduce food waste), Company 2 is able to reduce food waste, CO₂, water, land use and plastic. These positive results in terms of environmental sustainability translate into positive results in terms of prevention of biodiversity loss. Moreover, Company 2 is also active on promoting the culture of sustainability and biodiversity mainly through the LinkedIn page, by publishing posts on these topics.

Company 3 is a tech-company that provides its clients with the best consulting solutions on the market, including its own technologies and the most advanced ones, to improve environmental sustainability reducing the use of natural resources. Specifically, through the concept of circular economy, Nature Based Solutions and the efficiency of natural ecosystems, company 3 develops skills and technologies to replicate in industry and territories what nature does to optimize its resources. It proposes on the market innovative and comprehensive solutions for industries and territories to responsibly deploy natural resources-energy, water, materials, and soil-to optimize their uses, decreasing the amount of CO₂ emitted, recovering resources from waste, producing energy from innovative renewable resources, and combating climate change to prevent biodiversity loss. This is done to address major critical environmental issues and provide resilience to the Planet of the Future. Company 3 develops and aggregates technologies, solutions, innovations and skills to transform the industrial supply chain and territories into resources for people and the environment, in order to combat the scarcity of natural resources by limiting their extraction and promoting the reuse of those already present, promote the regeneration of biodiversity and counter climate change, creating a true circular symbiosis between people, economy, business and the environment. The main business areas are: (1) Technology, it is active in creating solutions for industries, processing and process chains; (2) Farm, it is active in the creation of land regeneration solutions and technologies for agriculture; (3) Renewables, it is active in the development of Innovative Renewable Sources Innovation center; and (4) it is active in the field of Open Innovation and Venture Capital. Company 3 activity starts with the analysis of an actor’s needs and try to involve all the other actors close to the client business. In this case, it aims at involving different stakeholders to create a superior value for sustainability and biodiversity goals. Company 3, as the other two ones, uses the LinkedIn page to promote the culture of sustainability and biodiversity through the publishing of information and events on the topics.

In addition to the desk analysis of companies’ website and LinkedIn pages, as data source, we analyzed the interviews done with managers and a co-founder of the companies considered in this study. First of all, for all three companies, even if in different ways, biodiversity has a central role in their business. For all companies, biodiversity is the engine of their business:

“We started our business with the aim of monitoring beehives to prevent the death bees, but immediately we perceived the key value of biodiversity and focused this new perspective.” (Company 1)

“Biodiversity protection and promotion is a key aspect for our business because it allows to assure a large variety of ingredients to satisfy all types of diets for different types of ethnicities.” (Company 2)

“When we interact with our clients we highlight the relevance that Nature Based Solutions for resource efficiency have in terms of biodiversity and how it is important for the development of society. In this way, clients become aware to our solutions.” (Company 3)

As far as digital technologies are concerned, the three companies use them for different purposes but it can be noticed that all technologies are essential for their business. All three companies base business on technologies. In particular, Company 1 born as tech-company that uses IoT and sensors for monitoring beehives. Then, these technologies have been used also to monitoring biodiversity of lands. In addition, when started the beehive adoption project, we developed an app for this purpose. Company 2, would not exist without technologies because it is a digital company that offers its own services through a digital platform. In this case, technology is a tool to promote biodiversity by delivering different ingredients for different diets. Finally, for Company 3, technologies support the Nature Based Solutions they offer, thus it has a key role in delivering efficient services.

“To provide our services we need technology and data to precisely meet need of beekeepers as well as of individuals that adopt a beehive...Technology is for us necessary to assure biodiversity.” (Company 1)

“In promoting our Nature Based Solutions, we consider technologies necessary to reach efficient sustainable results. Moreover, technologies allow us to monitor biodiversity and act immediately.”
(Company 3)

In addition to the relevance that technologies have for the business of the three companies considered, an element of analysis regarded the role of the different stakeholders. For all three companies, this topic is extremely important. Without the involvement of stakeholders and partners is difficult to reach sustainable results and protect biodiversity.

“In addition to the beekeepers, land owners and citizens directly involved in the business, we collaborate with different research, universities and other institutions as well as with other partners.” (Company 1)

“In our business we need of the involvement of other organizations and of clients. They should be culturally prepared to the concepts of zero food waste to save resources useful for sustainability and biodiversity goals.” (Company 2)

“Biodiversity needs of stakeholders involvement. This is a cultural innovation first of all. We try to imprint this concept to other companies highlighting the value of nature for businesses and society.” (Company 3)

Finally, though interviews we aimed at assessing the relationship between biodiversity and innovation. For Company 1, biodiversity allowed to innovate the business model. Indeed, from a technology for beekeepers moved on a technology that allows to involve individuals in adopting beehives, initially, and then trees and bees. Company 2 considers biodiversity to innovate products (ingredients and diets) and services (personalized nutrition) that it offers. Company 3 uses biodiversity to innovate the clients’ business models.

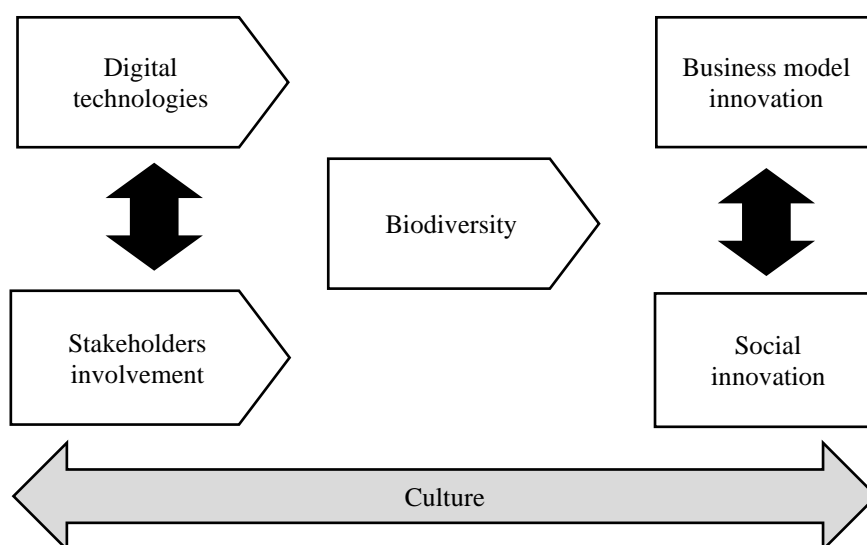
“Initially within 3bee's business model, the idea was to sell this device to beekeepers. Then, we noticed that people were interested protecting bees and prevent biodiversity loss, so we basically modified our business model through an ad-hoc website and app that allow to remotely adopt and monitoring hives. In this case, culture is important. Understanding the relevance of biodiversity affects the social approach to the topic.” (Company 1)

“Biodiversity protection allow us to offer different ingredients for different people needs. In this way we can innovate our business also promoting personalized nutrition.” (Company 2)

“In our solutions, from a circular economy viewpoint, we offer to the clients the opportunity to innovate the business models by considering the re-use of their waste in other business activities.” (Company 3)

The results of content analysis of the interviews done with managers and a co-founder of the three companies considered allowed us to depict a possible theoretical framework (Figure 1) that emphasize the different role all main variables of this study have with regard to the biodiversity, which can be both an output of innovative services and a driver for innovation.

Fig. 1: Theoretical framework proposed



Source: Authors’ elaboration

Research limitations. *The study has some limitations that could be thought as hints for the future research. Firstly, the study is based only on the analysis of three companies. More case studies belonging to different industries can improve*

the understanding of the phenomenon. Moreover, the study bases on a qualitative exploratory analysis. A more comprehensive research considering a quantitative analysis and other variables in addition to those reported in Figure 1, such as culture, is needed to better understand cause-effect relationships among the different variables.

Managerial implications. Although this is only a preliminary step of the study, it has different implications for companies and policy-makers. Firstly, for businesses biodiversity can be both an output and a driver of innovation. On one side, the use of digital technologies as well as the involvement of stakeholders are two main variables that companies should consider to reach positive results in terms of biodiversity protection and promotion. Digital technologies allow to favor the development of an efficient ecosystem of services needed for biodiversity (Pimm et al., 2015). The involvement of stakeholders leads to an integrated strategy that accelerates the process of transition towards sustainable businesses that favor biodiversity (Leclère et al., 2020). On the other side, by reaching biodiversity goals, companies can innovate their own business model to reach individuals' needs. In this way, companies can favor the spread of ecological knowledge, which is very important in influencing business and social perceptions and actions regarding biodiversity.

Moreover, the results of analysis highlighted the relevance of culture for this kind of topics. Culture is a cross-sectional factor that affects all the linkages of the different variables analyzed with biodiversity. In this sense, policy-makers should contribute to improve the social context, not only through rules and regulations, but also through promotion policies for organizations and citizens to favor learning about biodiversity. Social learning describes the process through which new ecological knowledge translates into business (Siebenhüner & Arnold, 2007) and social actions (Siebenhüner et al., 2016) regarding biodiversity.

Originality of the paper. The research is one of the first studies that aims at assessing how biodiversity relates to innovation from a business perspective and a connection with the social perspective. Based on a multiple case studies approach, the study highlights the double role of biodiversity as output of innovative services, through the use of various digital technologies and the involvement of stakeholders and as driver for business model and social innovation. Moreover, the study provides further knowledge in describing how policy-makers can support biodiversity acting on the promotion of a culture of biodiversity.

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How do Dynamic capabilities, Ecosystems and Green innovations contribute to the creation of a Net Zero Path? Insights from Italian wine sector.

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Abstract.

Sustainability strategies of firms produce significant advantages for the environment and the economy. There are some knowledge gaps in the literature, as little research addresses how firms develop capabilities to identify development patterns and gain competitive advantage over time by implementing sustainability strategies in terms of products and processes. This study combines an integrated theoretical framework (dynamic capabilities, ecosystem, and green innovations) to explore the path toward net zero of a small Italian winemaking firm that implements sustainable management and the circular economy. Our results clearly show that the adopted integrated theoretical framework allows for the analysis of the firm's strategic behavior toward carbon neutrality, identifying seven different phases and characterizing them according to the dynamic capabilities framework (sensing, seizing, configuring).

Key words: *dynamic capabilities; sustainability; ecosystem; green innovations; wine sector.*

Framing of the research. *Over the past decades, developing environmentally sustainable strategies has become crucial for achieving a sustainable competitive advantage. According to Teece, Pisano, and Shuen (1997), the dynamic capabilities framework aids in understanding how a firm's ability to integrate, build, and reconfigure internal and external competencies can address the rapid changes occurring in the dynamic business environment. In this capacity for successful innovation and value capture over time, the ecosystem plays a pivotal role, defined as "the community of organizations, institutions, and individuals that impact the enterprise and the enterprise's customers and suppliers" (Teece, 2007:1325).*

The disruptive nature of sustainability (Kortus & Gutmann, 2023:415), due to the drastically increased environmental requirements from various stakeholders, including governments, investors, customers, and society, necessitates that firms establish new strategies and solutions to design a path towards carbon neutrality. Accordingly, it is important to reconcile the debate between practitioners and academics on the relevance of green innovations (Dangelico et al., 2017) in compliance with the 2030 Agenda for Sustainable Development and the 17 Sustainable Development Goals (SDGs).

Nevertheless, what remains scarcely addressed in the existing literature is how firms develop capabilities to identify development patterns and gain competitive advantage over time by implementing sustainability strategies in terms of products and processes (Khan et al., 2020). To address this gap, we adopt a dynamic capability framework, as previously utilized in strategic management studies (Eisenhardt & Martin, 2000; Winter, 2003; Zahra, Sapienza, & Davidsson, 2006) and in corporate sustainability theory (Kabongo & Boiral, 2017; Wu et al., 2013). Wu et al. (2012) highlighted that "how firms develop and apply dynamic capabilities to address the distinctive challenges involved in corporate change toward sustainability is yet to be fully explored" (p. 233). According to Daddi et al. (2018), we assert that the dynamic capabilities framework (hereafter, DC) is underexplored in the context of sustainability management.

In this regard, the paper adopts the approach proposed by Teece (2007), whereby dynamic capabilities can be divided into three main clusters: (1) sensing, which involves sensing and shaping opportunities and threats, (2) seizing opportunities, and (3) reconfiguring, which involves enhancing, combining, protecting, and, when necessary,

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reconfiguring the firm's intangible and tangible assets to maintain competitiveness (Teece, 2007:1319). In light of this, dynamic capabilities are investigated in terms of sensing, seizing, and reconfiguring capabilities. The author identifies some micro-foundations composed of distinct skills, processes, and organizational activities (Teece, 2007).

Purpose of the paper. The paper aims to shed more light on the dynamic capabilities framework by exploring how these capabilities impact the path toward the net zero goal. Dynamic capabilities are considered the result of both an internal development process and the firm's interaction with its ecosystem. Additionally, it is assumed that the creation of dynamic capabilities supports the development of green innovations. To measure the firm's progress toward the net zero goal, the types of sustainability assessment tools adopted are analyzed to identify any learning processes within the firm and how they are influenced by ecosystem interactions.

The paper's research questions are summarized as follows:

- RQ 1: What kind of dynamic capabilities are developed by firms implementing sustainability strategies?
- RQ 2: What is the role of the ecosystem in developing dynamic capabilities?
- RQ 3: What types of innovation are developed based on dynamic capabilities?
- RQ 4: What types of sustainability assessment tools are adopted by companies to verify the impact of green innovations along the path toward the net zero goal?

Methodology. As previously stated, this paper adopts a comprehensive theoretical framework based on the dynamic capabilities approach (Teece, Pisano, and Shuen, 1997) to investigate the firm's strategy toward the net zero goal. Specifically, it is assumed that a company may develop a set of capabilities through interactions with its ecosystem, leading to the achievement of green innovations. Due to the novelty of the topic, a qualitative research method was chosen (Bryman, 2012), as qualitative case studies can generate a detailed and multifaceted understanding of a complex issue within its real-life context (Schwandt and Gates, 2018).

The authors decided to develop a longitudinal case study, defined as "a time-ordered analysis of events that occur during a period of the entity's history." This longitudinal approach provides a strong rationale for a single case study. Therefore, the investigation of the previously defined research questions was conducted through a longitudinal case study. A purposive sampling approach was adopted, as the authors expected that selecting a case based on predefined criteria would provide the necessary information to answer the research questions and increase the study's reliability (Bryman, 2012; Etikan et al., 2016). Bernhard (2011) noted that purposive sampling is particularly useful for "intensive case studies" (p. 698), which is applicable to this longitudinal case study.

The case selection was based on the following criteria: a) The company should belong to an industry characterized by a high level of engagement in sustainability. Santini et al. (2013) pointed out that sustainability plays a key role in the wine industry, as demonstrated by the increasing interest of academia, policymakers, and practitioners. b) The company should be a micro or small enterprise, as it is generally assumed that such firms possess a lower level of capabilities but may develop them through interactions with external actors in the firm's ecosystem. c) The company should have implemented organic farming criteria according to EU Regulation 2020/464. d) The company should directly manage the entire wine production process, from vine cultivation to winemaking and bottling. e) The company should have implemented a sustainable and circular business model.

Based on these criteria, academic literature and press news regarding Italian winemakers were analyzed to identify potential case study targets. This led to the identification of a small winemaking company located in the north of the Lazio Region (Central Italy). According to Chiriaco et al. (2019), this company achieved carbon neutrality, producing no impact in terms of GHG emissions. Additionally, the company developed several collaborations with universities and research centers and promoted various green innovations (Mura et al., 2023; 2024).

The company was contacted by the authors, and the research aims were presented to the entrepreneur, who agreed to collaborate and made his network of relationships with actors in the firm's ecosystem available. Based on this collaboration, the authors selected the key informants summarized in Table 1.

Table 1. Primary sources for data collection

Primary data collection (Semi- structured interviews)	Entrepreneur Employee in charge of communication activities toward company visitors Sustainability expert at a researcher center collaborating with the selected company University professor acting as Principal investigator in two applied research projects involving the selected firm Firm's business customer (restaurant) involved in a reverse logistics project
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Semi-structured interviews with selected key informants were conducted via MS Teams and audio-recorded with permission; each interview lasted no less than 60 minutes. All interviews were transcribed for rigorous qualitative data analysis via manual coding. Additionally, the transcriptions were sent to the interviewees for confirmation of the content. If further information was needed during the data analysis, key informants were contacted again.

Consistent with other studies (Khan et al., 2020), we triangulated the interview data to minimize biases, limitations of memory recall, and other issues generally present in qualitative research. Additionally, secondary data from the firm

were analyzed using archival sources such as firm reports, press releases (including interviews with the entrepreneur), final reports of applied research projects, and the firm’s website.

Collected data were separately analyzed by each author to define the different phases of the dynamic capabilities process. For each phase, the following issues were identified:

- a) Phase number;
- b) Brief description;
- c) Involved actors within the firm’s ecosystem;
- d) Developed green innovations (if any) and their classification according to the Oslo Manual (OECD/Eurostat, 2018).

After comparing classifications developed by individual authors, no significant differences emerged. Finally, all authors identified the corresponding dynamic capability micro-foundations and the relative clusters for each phase, according to the approach by Teece et al. (1997).

The findings, collected and classified according to the described research methodology, are presented and discussed in the next section.

Results. The results of the study are summarised in 7 phases, in temporal sequence (longitudinal approach) (Table 2).

Table 2. Phases description of the path toward net zero

Phases	Description
1	Orientation towards environmental sustainability, the wine sector and self-entrepreneurship
2	Starting the entrepreneurial activity
3	Occasional collaboration with the University
4	Structured collaboration with universities and other research centers
5	Collaboration with University spin-offs
6	Structured collaboration with universities and other ecosystem partners
7	Independently developed green innovations

Each phase has been analysed according to the methodology above described and main results are summarized in Table 3.

Table 3 – Results of the study

PHASES	PHASE DESCRIPTION	ECOSYSTEM'S INVOLVED ACTORS	GREEN INNOVATION	SUSTAINABILITY ASSESSMENT TOOL	MICROFOUNDATIONS	CLUSTERS OF DYNAMIC CAPABILITIES
1	Orientation towards environmental sustainability, the wine sector and self-entrepreneurship	Future entrepreneur/ Family of origin	-	-	Market monitoring and scanning	SENSING
2	Starting the entrepreneurial activity	Firm/Wine Cellar Designer/Architect	Product level innovation		Idea generation	
3	Occasional collaboration with the University	Firm/University	Marketing (packaging level innovation);	LCA	Experiential learning	
4	Structured collaboration with University	Firm/University/Research centers	Product innovation; Process innovation		Structured collaboration with universities and other research centers	SEIZING
5	Collaboration with spin-off	Firm/University/Spinoff	-	LCA	Collaboration with spin-off	SEIZING/RECONFIGURING
6	Structured collaboration with universities and other ecosystem partners (institutional and business)	Firm/University/Research centers/Engineering business company	-		Collaboration with universities and other ecosystem partners	
7	Independently developed green innovations		Marketing (communication level innovation); Marketing (packaging level innovation)		Experiential learning	RECONFIGURING

The obtained results clearly show that the adopted integrated theoretical framework allowed for an analysis of the firm's strategic behavior toward the net zero goal, identifying seven different phases and characterizing them according to the dynamic capabilities framework. However, it also emerged that a single phase can relate to more than one of the clusters proposed by Teece et al. (2007) (sensing, seizing, reconfiguring). For instance, Phase 5 (Collaboration with spin-offs) and Phase 6 (Structured collaboration with universities and other ecosystem partners - institutional and business) could be embedded in both the Seizing and Reconfiguring clusters. Both phases simultaneously allowed for the

exploitation of requisite knowledge and the implementation of new business practices (specific micro-foundation, named: best practices adaptation) while incorporating a culture of sustainability.

Each phase created specific dynamic capabilities, but they did not necessarily lead to the development of green innovations. This is the case for Phase 6, where interaction between the firm, universities, and other partners in the business ecosystem resulted in the development of a prototype wagon for biogas and organic compost production and systems for producing edible mushrooms. Unfortunately, due to technological constraints and limited business prospects, these projects did not proceed.

Consistent with the small firm size, most of the created innovations are related to marketing and process-level innovations. Among 13 innovations, there were 5 marketing innovations (packaging and communications), 5 process innovations, 2 product innovations, and 1 organizational-level innovation. More specifically, marketing innovations focused on packaging features (primary and secondary packaging), and communication innovations were more related to the firm's ability to conduct experiential wine events. These green innovations particularly resulted from interactions with other ecosystem players. For example, collaboration with a university led to the launch of a new line of wines without added sulfites (product innovation at the primary packaging level) and the environmental microsensORIZATION of the drying cell inside the cellar for energy saving, representing a series of interventions in the vinification process (process innovation).

An important innovation is the implementation of a strategy to transform the traditional linear business into a circular one by reusing organic waste transformed into compost for on-farm fertilization, weed control, and soil erosion prevention. In other cases, green innovations resulted from the firm's independent initiatives. Notably, the initial adoption of a lighter glass bottle for 95% of bottled wines (marketing innovation at the packaging level) aimed to reduce the environmental impact of wine packaging. Due to the impossibility of adopting the same strategy for aged wines, the firm implemented a circular strategy, which involved refurbishing raw materials. Customers, particularly in the Ho.Re.Ca. sector, could return empty glass bottles, fabric labels, and shellac to the wine firm (reverse logistics), resulting in a 10% discount on new wine purchases (organizational innovation). This also strengthened relationships with Ho.Re.Ca. customers. Subsequently, the firm introduced a box made from recycled cardboard (marketing innovation at the secondary packaging level).

Regarding RQ4, it emerged that assessment tools evolved over time and directly supported the implementation of green innovations. For instance, in an early stage (Phase 3), the firm collaborated occasionally with a university through the participation of Master's Degree students in implementing the LCA methodology for carbon footprint assessment. This aimed to analyze the greenhouse gas (GHG) emissions, conventionally measured using the functional unit (FU) of kg of CO₂eq per 0.75 L bottle. In a later stage (Phase 5), through collaboration with a university spin-off, the overall GHG fluxes budget was assessed at the wine farm level (from the vineyard to the final bottle of wine), using an integrated approach that included the eddy covariance technique and the LCA. This comprehensive approach allowed for assessing the carbon footprint using both the traditional product unit (1 bottle of wine of 0.75 L) and the unit of land (1 ha of vineyard). This new functional unit allowed for a more realistic land-based GHG accountability of agricultural processes, whose life cycle involves land use of managed ecosystems, thus estimating the actual contribution to climate change.

Various studies (Renzulli et al., 2015; Chiriaco et al., 2017; Chiriaco et al., 2022) demonstrate that the carbon footprint assessed by product units for agricultural products is not always fair, as it is primarily related to yields. Intensive management with high agricultural inputs per hectare generates higher GHG emissions in absolute terms per unit of land, which can be overshadowed by higher productivity when assessed per units of product. Instead, the carbon footprint per unit of land better reflects the actual agricultural contribution to climate change, driven by land-atmosphere GHG fluxes, independently of the number of bottles produced. This new method of determining the impact per unit of land revealed that the farm was already carbon neutral in the field phase since sustainable practices applied in the vineyard turned the system into a net carbon sink (i.e., -0.27 MgCO₂eq per ha per year), completely offsetting the anthropogenic emissions associated with vineyard management (i.e., 0.24 MgCO₂eq per ha per year).

Research limitations. *While providing interesting insights, the research has all the limitations of a single case study. In particular, it does not allow for the generalization of the results due to the analysis focused on one specific industry and one country. At the same time, carrying out a single case study is a leading research method that provides important insights in business studies (Leone et al., 2021). Future research avenues may apply the same analysis on other firms in the sector of agri-food industry (Esposito et al., 2020), investigating how the dynamic capabilities could enhance the circular food economy as at the core of the EU Green Deal. In addition, future research could analyze different sectors or new countries.*

Managerial implications. *Our findings suggest managerial implications for organizations and managers in relation to the implementation of dynamic capabilities in developing sustainability strategies (Kabongo & Boiral, 2017; Wu et al., 2013) and green innovations. In particular, from the firm's perspective the relationship between the firm and the university is strictly important in order to implement and enhance dynamic capabilities. From the other perspective, the University plays a pivotal role in contributing to implement the innovations at different level.*

Originality of the paper. *The originality of this contribution lies in developing a longitudinal case study related to the small firm's dynamic capabilities in wine sector since, to the best of our knowledge, most academic contributions refer to quantitative analysis. In addition, in order to analyze the effective contribution of the green innovation to the firm's carbon neutrality path, this study considers the evolution in adopting environmental assessment tools (namely, LCA).*

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Linking innovation and sustainability through equity-based crowdfunding campaigns. A focus on cultural and creative industries

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Abstract

This work in progress explores the intersection of open innovation, entrepreneurship, and sustainability within the cultural and creative industries, particularly through the lens of equity based crowdfunding campaigns. Drawing from the growing emphasis on sustainability-oriented innovation, we delve into the dynamics of crowdfunding as a platform for fostering innovative solutions while addressing societal and environmental concerns. By focusing on the renowned Italian context, celebrated for its cultural heritage and creativity, we examine the role of sustainability issues in the design of successful equity crowdfunding campaigns, specifically within the cultural and creative industries.

Conducting an exploratory study, we employed a multiple case study methodology, selecting three equity crowdfunding projects from the Mamacrowd platform, representing different categories within the cultural and creative industries. Our findings underscore the significance of integrating sustainability principles into entrepreneurial ventures. We highlight the emergence of innovative startups led by all-female founding teams, initiatives promoting educational engagement, and efforts towards waste reduction through craftsmanship and production efficiency.

Key words: innovation; entrepreneurship; sustainability; equity-based crowdfunding; cultural and creative industries; craftsmanship

Framing of the research. *The expansion of innovation horizons following the introduction of the open innovation concept (Chesbrough, 2003), has sparked extensive exploration into various facets of innovation advancement (Bigliardi et al., 2021). Embracing external input has not only broadened the spectrum from conceptualizing new products and services but also diversified funding sources, extending beyond traditional avenues such as banks and venture capitalists to engage a broader community, commonly referred to as the “crowd” (Cappa, 2022). Crowdfunding has emerged as one of new players that entered the global arena (Block et al., 2018) and a digital innovation that provides financial backing for new entrepreneurial ventures (startups) or projects initiated by businesses or individuals (Troise et al., 2020, 2022; Bargoni et al., 2022). Unlike conventional funding channels such as banks or venture capitalists, project initiators now directly engage with a virtual community of potential stakeholders (or shareholders in equity-based crowdfunding) via the Internet, leveraging a myriad of platforms developed for this purpose. Crowdfunding initiatives allow the creation of new community not only for fundraising but also for new connections, generating more value than pure monetary returns, often referred to as “more than money” (Brown et al., 2019): successful crowdfunding campaigns validate market demand, but more importantly, they build a supporting community and facilitate the development of social capital for campaign initiators, also through crowd co-creation (Ryu, 2020).*

Within the realm of crowdfunding, among the various types of online platforms and crowdfunding models, four crowdfunding models have been identified by current literature (Vrontis et al., 2021; Troise et al., 2023a): reward based crowdfunding; equity based crowdfunding, donation based crowdfunding, and lending based crowdfunding. Among these models and the related digital platforms, the most widely known to the public are reward-based platforms, where contributions are rewarded with various incentives, and equity based platforms, which are regulated at the national level (e.g., by CONSOB in Italy, the public authority responsible for regulating the Italian financial markets) and involve participation through the acquisition of (equity) shares in the company’s capital. An example of a most known reward-based crowdfunding platform is Kickstarter (Testa et al., 2024), followed by GoFundMe and Indiegogo, while an example of a leading equity-based crowdfunding platform in Europe is Crowdcube (Vismara, 2016).

On the other hand, the growing emphasis on sustainability related concerns, government initiatives promoting greener policies, and the attention from global bodies like the United Nations through the Sustainable Development Goals (UN SDGs) have forged a robust connection between innovation and sustainability, with a growing attention in innovation management studies (Kimpimäki et al., 2022). This linkage endeavors to foster the creation of innovative products and services while upholding environmental stewardship and addressing the needs of marginalized communities. The

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overarching goal is to tackle the significant societal challenges through conscientious innovation (Voegtlin et al., 2022). For businesses, this entails a commitment to contribute to a better world by developing innovations that mitigate potential negative impacts while simultaneously addressing societal issues, all while maintaining operational continuity, achieving success, and enhancing competitiveness (Borgers et al., 2020).

These expected practical contributions, in the evolving business environment, have positioned open innovation as a valuable strategy for tackling sustainability challenges. Crowdfunding platforms are emerging as integral components of open innovation, gradually gaining traction among companies seeking innovative solutions, leading to the development of concepts of sustainability-oriented innovation when studying crowdfunding initiatives (Calic and Mosakowski, 2016; Troise et al., 2021).

Purpose of the paper. The connection between innovation and sustainability has been analyzed in agri-food industries where environmental issues are prominent (Troise et al., 2021; Abbate et al., 2023). However, over the last twenty years, the adoption of sustainability-oriented innovation has rapidly increased in cultural and creative industries, beginning with the focus on innovation in understanding the creative capacity as a driving force behind the germination of ideas (Lazzeretti, 2012) to the stress on sustainability, with a focus on social aspects, particularly highlighting improvements in health and well-being when participating in or being involved in cultural activities (Rodriguez et al., 2024). In fact, since 2019, the World Health Organization (Fancourt and Finn, 2019) has reported that systematic involvement in arts and culture contributes to enhancing well-being, fostering health, preventing, managing, and treating numerous physical and mental health conditions.

The need to further understand the link between innovation and sustainability has led us to analyze crowdfunding campaigns – as examples of open innovation tools (Di Pietro et al., 2018; Troise et al., 2021, 2023a) – proposed by companies belonging to cultural and creative industries (Cicchiello et al., 2022). This is a context where sustainability issues are growing rapidly and its distinctive characteristics have seen pioneering examples of crowdfunding campaigns – e.g., “fan-funding platform” (Bannerman, 2012) for gathering financial support from fans for music projects. Although cultural and creative industries crowdfunding is becoming increasingly recognized as a funding option, especially through reward based crowdfunding campaigns (Rykkja et al., 2020b; Cavalcanti Junqueira and Soetanto, 2022; Petit and Wirtz, 2022) it has not fully replaced conventional funding sources in the majority of situations and there is still a scarcity of research exploring the influence and significance of crowdfunding on stakeholders (Rykkja et al., 2020a).

Moreover, when considering sustainability in crowdfunding activities, recent call for future research have highlighted the need for more studies on equity based crowdfunding (Mochkabadi and Volkmann, 2020; Wehnert and Beckmann, 2021). Thus, the primary objective of this study is to comprehend the role of sustainability in design a successful campaign of equity based crowdfunding. Specifically, the research question is: which is the role of sustainability issues in equity crowdfunding campaigns?

Methodology. The exploratory nature of our current work in progress prompted the adoption of a qualitative approach (Eisenhardt, 1989). Utilizing case study research (Yin, 2009) offers unique advantages in comprehending the intricate contextual factors that influence sustainability-oriented innovation. Rather than opting for a single case study, we chose to employ a multiple case study approach, as it has been noted to enhance the credibility of evidence and enable a more nuanced assessment of findings (Yin, 2009; Gustafsson, 2017). Through an in-depth analysis of cases, we can uncover detailed narratives, revealing the motivations, challenges, and success factors that quantitative data alone may overlook (Mochkabadi and Volkmann, 2020; Wehnert and Beckmann, 2021). This qualitative lens provides a more comprehensive understanding of the social, cultural, and organizational dynamics shaping sustainability-driven innovation initiatives.

Given the esteemed Italian context, renowned for its celebration of culture and creativity worldwide, our objective of elucidating the role of sustainability in initiating and promoting successful equity crowdfunding campaigns led to the selection of projects within these industries. We drew from one of Italy's most utilized platforms for equity-based crowdfunding, namely Mamacrowd (by SiamoSoci). This platform is one of the leading in the Italian context (Battisti et al., 2024) as shown in the latest reports (see among others the last report provided by Politecnico of Milan, namely “8° Report italiano sul CrowdInvesting - Osservatori Entrepreneurship Finance & Innovation”). The Italian context is particularly interesting to study the equity crowdfunding phenomenon being the first to introduce and regulate this specific crowdfunding model in Europe (Vismara, 2016; Troise and Tani, 2021).

As this research is a work in progress, we have already checked the platform website in search of successfully funded campaigns related to cultural and creative industries using the following keywords: “arts”, “craftsmanship”, “craft”, “book”, “artisan”. We have decided to select only the closed campaigns concluded more than six months ago but not extending the range to the projects older than two years. These criteria have allowed us to select three projects belonging to three different categories used by the Mamacrowd platform, namely community (Tadaan), marketplace (Bookdealer), and fashion (Mycamicia).

To achieve triangulation (Yin, 2009), in addition to the data collected from the platform, we are gathering further data from two other secondary sources such as online interviews conducted with the founders, i.e., those who launched the campaign, specific online press, official websites of the financed projects, social media channels used by the companies and reputable online reports or sources specifically dedicated to the entrepreneurial ecosystem.

Results. The expected results will underscore the intrinsic connection between innovation, entrepreneurship, and sustainability within the realm of equity based crowdfunding, specifically focusing on initiatives in the cultural and creative industries. Preliminary evidence suggests a growing emphasis on addressing social sustainability concerns, particularly those pertaining to women's empowerment and gender equality. For instance, the emergence of innovative

startups led by all-female founding teams under the age of 35 serves as a compelling example of this shift towards inclusivity and diversity within entrepreneurial endeavors. This finding may support the valuable importance of entrepreneurial teams in the equity crowdfunding journey (Troise et al., 2024) and, in this specific case, their role in the sustainability oriented sphere of the entrepreneurial initiatives. Additionally, there is a discernible recognition of the importance of promoting educational initiatives and fostering a sense of community engagement, as evidenced by projects centered around communal reading programs and similar activities.

Furthermore, the initial findings shed light on the significance of integrating sustainable practices into production processes, particularly concerning environmental sustainability. Notably, craftsmanship emerges as a key driver in waste reduction efforts, with methodologies such as *Just in Time* and *Made to Last* production demonstrating efficacy in minimizing environmental impact. This underscores a broader movement towards environmentally conscious approaches within the creative and cultural sectors, reflecting a growing awareness of the importance of responsible resource management and sustainable business practices.

Research limitations. The research is a work in progress, and we are still collecting data, but it is crucial to acknowledge its current limitations. While the emphasis on cultural and creative industries provides valuable insights into the intersection of innovation, entrepreneurship, and sustainability within this specific domain, it also limits the generalizability of findings and their applicability across diverse contexts. Moreover, the subjective nature of case study selection introduces another layer of complexity. Despite efforts to maintain objectivity and transparency about our selection criteria, the inherent subjectivity in selecting case studies may raise concerns about the validity and reliability of findings. As the research progresses, addressing these limitations will be crucial to ensuring the robustness and credibility of its findings.

Managerial implications. The results will shed new light on the aspects concerning social and environmental sustainability in equity crowdfunding campaigns. Specifically, the research will allow entrepreneurs to understand how to link innovation and sustainability through the communication of positive impacts of their business idea or development project on people. The suggestions range from disseminating messages focused on the development of educational initiatives and the enhancement of the status of women by guaranteeing the gender equality to efforts towards waste reduction and customization. In this vein, previous studies highlighted the crucial role of the formulation of “message framing” in influencing investor or customer behaviours in crowdfunding contexts (Corsini and Frey, 2023; Testa et al., 2024).

From a managerial standpoint, these results carry significant implications for campaign initiators, namely entrepreneurs, and stakeholders involved as the crowd, so called bakers or investors. Firstly, entrepreneurs are urged to recognize the strategic value of embedding sustainability principles into their innovative ventures, as it not only enhances social and environmental impact but also fosters long-term competitiveness and resilience in an evolving market landscape. Furthermore, recent studies provided evidence that equity crowdfunding platforms provide additional benefits (other than financial ones) to entrepreneurs (such as in terms of knowledge and network) (Troise and Tani, 2021; Troise et al., 2023 a, 2023b). Secondly, the research shows how stakeholders in equity based crowdfunding platforms are encouraged to prioritize projects that demonstrate a commitment to sustainability, recognizing the potential for both financial returns and positive societal outcomes.

Originality of the paper. This paper contributes to the ongoing discourse surrounding sustainable-oriented innovation in several significant ways. Firstly, it delves into the relatively overlooked realm of equity crowdfunding campaigns within cultural and creative industries, a sector predominantly characterized by the utilization of reward-based crowdfunding platforms by campaign initiators (Rykkja et al., 2020b; Cavalcanti Junqueira and Soetanto, 2022; Cicchiello et al., 2022).

Secondly, our work in progress represents an original attempt to interconnect the concepts of open innovation, entrepreneurship, and sustainability, with a specific emphasis on social sustainability. The latter is an emerging orientation within cultural and creative industries, where issues like women’s empowerment, inclusion, health, and well-being are gaining traction.

Furthermore, we have adopted a qualitative approach in conducting our research, in contrast to the predominant utilization of quantitative methodologies noted in sustainability-oriented innovation via crowdfunding (Wehnert and Beckmann, 2021) and in equity based crowdfunding (Mochkabadi and Volkmann, 2020). This systematic qualitative approach to data collection and analysis diverges from the prevalent reliance on statistical measures and numerical data to evaluate the impact and effectiveness of sustainability initiatives, particularly evident in crowdfunding campaigns within cultural and creative industries (Petit and Wirtz, 2022). By taking this qualitative stance, our research offers a fresh perspective on the dynamics of crowdfunding within cultural and creative industries.

In essence, this study underscores the symbiotic relationship between innovation, entrepreneurship, and sustainability, emphasizing the necessity for businesses to adopt holistic and responsible practices in driving societal progress and economic growth.

Finally, this paper aims to respond to recent calls for more research in the sphere of the above mentioned domains, especially in the role of crowdfunding in moving towards a sustainable society (Testa et al., 2019; Troise et al., 2021), and in the evolution or development of crowdfunding in the context of cultural and creative industries (Moritz and Block, 2016; Ryu, 2019; Rykkja et al., 2020a, 2020b).

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Product vs sales platform sustainability: who wins the online challenge? An exploratory analysis of Italian consumers

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Abstract

Nowadays, sustainability has emerged as a paramount concern across various industries. Addressing environmental and social sustainability issues has become increasingly urgent in light of escalating global challenges, such as climate change, biodiversity loss, pollution, resource depletion, and waste management. This study delves into the intricate dynamics of sustainability within e-commerce, specifically focusing on Italian consumers' perspectives. While offering unparalleled convenience and accessibility, e-commerce has also been implicated in encouraging compulsive purchasing practices (i.e., leading to unnecessary purchases, often changing products or devices in pursuit of the latest versions or updates), exacerbating greenhouse gas (GHG) emissions (due to the high environmental cost associated with shipping, especially intercontinental ones) and generating significant waste (in terms of over-packaging and plastic films as well as technologically obsolete products). As the digital marketplace continues to burgeon, understanding its environmental footprint and devising strategies to mitigate its adverse effects is imperative. Recognising the pressing need for transformation within the e-commerce sector, through an Exploratory Factor Analysis (EFA) performed on a sample of 382 respondents, this research aims to understand the extent to which Italian consumers prioritise sustainability considerations in their purchasing decisions. Furthermore, it seeks to investigate whether product or platform sustainability enhancements exert a noticeable influence on consumers' propensity towards sustainable-conscious purchasing behaviours. By integrating insights from consumer behaviour studies and sustainability literature, this study contributes to clarify the nuanced interplay between e-commerce, sustainability, and consumer preferences. The results hold implications for businesses, policymakers, and stakeholders invested in fostering more sustainable practices within the digital marketplace. Ultimately, this research seeks to inform strategies aimed at fostering a more sustainable and responsible e-commerce ecosystem.

Key words: sustainability; product; sales platform; e-commerce; consumers behaviours; online purchases.

Framing of the research. The presence of e-commerce in the actual consumers' habits is relevant. Taking into consideration only one of the possible indicators, for example the total worldwide retail e-commerce revenue in 2023, the aggregate value amounts to more than 3,1 billion dollars. Europe is ranked in third position, immediately after America. These numbers are the concrete evidence of the actual dimension of this channel, in terms of selling activity, both for producers and distributors, underlining the weight of developed countries.

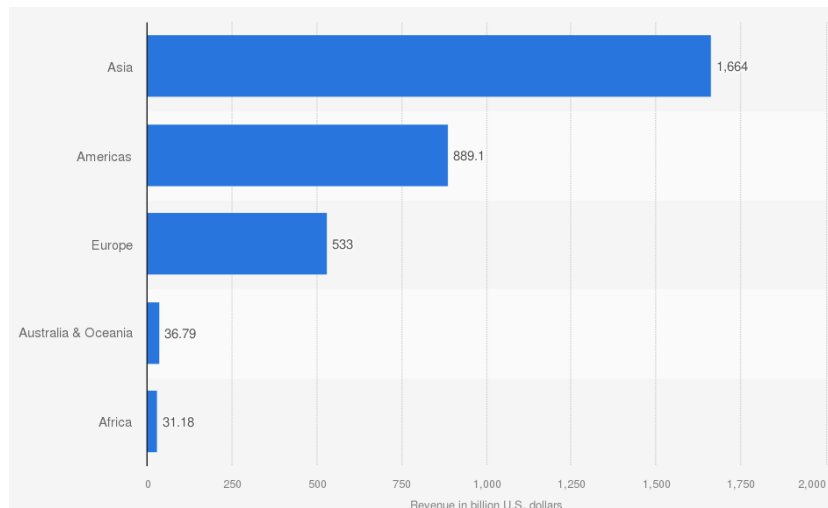
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Graphic 1: Total retail e-commerce revenue worldwide in 2023, by region (in billion U.S. dollars)



Source: Statista (2024).

Surely COVID-19 pushed online shopping, changing the approach of different stores or operators as well as the purchasing behaviour of consumers (Kim, 2020). In the last years e-commerce generated different opportunities for traditional and new companies, where the latter found new way for business development (Singh and Kundu, 2002). Observing this phenomena, more critical success factors were analysed, to understand the right setting for this modern form of sales. Five main categories were identified and precisely: technology acceptance factors, social factors, cognitive factors, ethical factors and environmental factors (Varela et al., 2017). However, the environmental factors are those that need a deeper attention, strictly connected with the other dimensions of sustainability (Pålsson et al., 2017; Oláh et al., 2018). Many researches focused the attention on specific aspect, like logistics (Cano et al., 2022; Ju et al., 2023; Gonzalez et al., 2023), above all for CO2 emissions (Carling et al., 2015), packaging (Lu, et al., 2020; Escursell et al., 2021; Yang et al. 2023) or supply chain (Rao et al., 2021; Prajapati et al., 2022). An enlarged vision in the relationship between e-commerce and sustainability is a recent field of research (Rita and Ramos, 2022; Haryanti and Subriadi, 2022). Actually, there is the necessity to search the determinants that could create a real competitive advantage in this way, generating a greater attractiveness of the value propositions. Hence, evaluating what above mentioned, the present study is an attempt to give a concrete contribution, specifically from the consumer point of view. In particular, the aim is to consider not only the importance attributed to sustainability in online purchases, but to verify whether this attention is paid in the same way to both the platform and the product. Going into reality, it is not necessarily the case that a "sustainable" product is sold within a platform that similarly gives a clear signal of convergence in this area, or vice versa. Therefore, how is important the sustainability of the on-line platform? How is relevant the sustainable commitment of the producer that uses the on-line channel? These are only some of the questions that represent the gap in the literature.

Purpose of the paper. Against this background, our research endeavours to explore the extent to which Italian consumers prioritise sustainability considerations in their e-commerce purchasing decisions, unravelling the complex dynamics within this sector. For this purpose, the following three research questions were defined:

RQ1: What factors drive Italian consumers' behaviour when purchasing from e-commerce platforms?

RQ2: Do sustainability features influence Italian consumers when purchasing from e-commerce platforms?

RQ3: How do sustainability enhancements in product offerings and e-commerce platforms influence Italian consumers' propensity towards sustainable-conscious purchasing behaviours?

The first research question aims to identify the factors that Italian consumers take into consideration when buying products from e-commerce platforms. These factors may include convenience, pricing, product variety, brand reputation, and sustainability, among others. Answering this question will help us understand whether the sample of Italian consumers considers and values sustainability during their purchases in the digital environment. This leads us to the second research question, which deepens the role of sustainability features in influencing Italian consumers' preferences within the e-commerce landscape. Through the lens of EFA methodology, this study aims to discern how sustainability considerations - such as eco-friendly packaging, ethical sourcing, carbon footprint reduction initiatives, to name a few - impact consumers' purchasing decisions. Finally, the third research question investigates the interplay between sustainability enhancements in product offerings and e-commerce platforms and their influence on Italian consumers' propensity towards sustainable-conscious purchasing behaviours. Therefore, the main objective is to identify the consumers' reactions to such sustainable initiatives, providing valuable insights for businesses and policymakers committed to promoting sustainable practices in the digital marketplace. By addressing these research questions, our study aims to contribute to a deeper understanding of consumer behaviour in e-commerce contexts and offer guidance on encouraging sustainability online.

Methodology. Based on the previous background and research objectives, an online questionnaire targeting Italian consumers was developed to highlight what moves their behaviour when purchasing products from e-commerce

platforms. The investigation examined the factors underneath Italians' online purchasing process, deepening the effect of the two sustainability implementations (i.e., product and sales platform) on online purchasing decisions as well as barriers and incentives towards more sustainable-conscious behaviour. The data collection process ran through the Google Form platform from January to March 2024, with an initial pre-test conducted beforehand. The investigation reached a sample size of 382 respondents and included multi-item questions reflecting the topics that emerged from the background analysis. To measure responses, some questions provided a seven-point Likert scale evaluation - with '1' and '7' representing low or high matches, respectively - while other questions employed open or multiple-choice answers. Notably, the study design was informed by similar methodologies that have produced positive outcomes in previous research (Bruner, 2021). The survey aimed to capture insights into the relationship between sustainable behaviour and e-commerce among Italian consumers. It consisted of six sections, each with a specific focus. The first section asked respondents about their general sustainability knowledge, including the environmental, social, and economic dimensions. It also aimed to understand the importance of sustainability in their everyday life decisions and how it influences their behaviour. Moving to Section 2, participants provided insights into their e-commerce usage patterns and the factors that influence their online purchasing processes. Section 3 delved deeper into the sustainability dialogue within e-commerce, exploring respondents' perceptions of product sustainability implementations while Section 4 shed light on consumers' attitudes towards platform-level sustainability initiatives. Section 5 was dedicated to investigating potential barriers and incentives influencing consumers' adoption of more sustainable-conscious behaviours. Finally, essential socio-demographic data useful for assessing the heterogeneity and reliability of the sample was collected. Through these sections, it was possible to capture a comprehensive understanding of Italian consumers' perceptions and behaviours concerning sustainability and e-commerce, contributing to a nuanced analysis of these interconnected domains.

Table 1: Sample composition

Gender	Age	Education	Occupation	Income (€)	Location
Male, 46 Female, 54	18-30, 53 31-45, 27 46-60, 16 >60, 4	High school or below, 45 College or university, 46 Postgraduate, 9	Student, 26 Employed, 46 Self-employed or entrepreneur, 14 Retired or unemployed, 14	< 999, 25 1.000-1.999, 42 2.000-2.999, 18 ≥ 3.000, 15	Northern Italy, 21 Central Italy, 8 Southern Italy and Isles, 71

Source: our elaboration.

The empirical analysis was performed on a sample of 382 participants who provided complete and reliable data. To ensure the reliability of our findings, the questionnaire included specific questions aimed at assessing the respondents' attention. In detail, participants were 54% female and 46% male, mainly from Southern Italy and Isles (71%), with an average age of 35 and a high school (45%) or university (46%) education. As for occupation, almost half of the respondents were employed (46%), followed by students (26%), self-employed or entrepreneurs (14%) and retired or unemployed (14%). This data reflects the average monthly income recorded, which stands at a medium-high level with an average of EUR 2,300,00. Table 1 summarises the respondents' socio-demographic profile.

Results. IBM SPSS Statistics was used to perform the Exploratory Factor Analysis (EFA), which helped us to identify the latent factors underneath the consumer behaviour of Italians when purchasing products from e-commerce platforms (Abdi and Williams, 2010). To avoid correlation and bias problems, 36 variables were selected from the original database, resulting in a final dataset of 382 observations. The correlation analysis confirmed the significance of all variables in explaining the phenomenon, showing positive values of low, medium, and high. To perform a robust analysis and test the sample's adequacy, the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO Test) and the Test of Sphericity by Bartlett were carried out. Low index values suggest the potential inadequacy of the sample, as correlations between pairs of variables cannot be explained by the variance shared by the set of variables. Both measures proved significant - the KMO Test value exceeded 0,7 while BTS significance was below 0,05 (Table 2) - allowing us to proceed with the analysis.

Table 2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,944
Bartlett's Test of Sphericity	Approx. Chi-Square	12323,92
	df	630
	Sig.	0

Source: our elaboration with IBM SPSS Statistics.

Next, communalities were studied and showed significant values regarding the level of variance explained by common factors. In particular, four factors were extracted - explaining more than half of the total variance (precisely, 70,29%) - as briefly summarised in Table 3.

Table 3: Summary of the latent factors

	Latent factor	Item	Value ¹
1	Principal e-commerce sales conditions and characteristics	SHIP_METH	0,857
		SHIP_COST	0,845
		SHIP_TIME	0,826
		B_REPUT	0,821
		SAFETY	0,815
		REVIEW	0,813
		PRICE	0,792
		VARIETY	0,789
		REPUTATION	0,778
		RET_POLICY	0,762
		NAV_EASY	0,751
		NAV_EXP	0,746
		SALES	0,724
		INNOV	0,629
PICK-UP_POINT	0,556		
SUST	0,526		
2	Product and sales platform sustainable features	SUST_CERT	0,821
		PLAT_SUST	0,821
		PROD_WTP	0,804
		SUST_E-COM	0,789
		PLAT_WTP	0,768
		PROD_ENV	0,747
		PLAT_EFFORT	0,692
		PROD_SOC	0,664
		PLAT_TRANSP	0,604
		SUST_KNOW	0,555
		PROD_ECO	0,535
		3	Consumers' commitment toward sustainability
SUST_SOC	0,823		
SUST_INFL_ECO	0,758		
SUST_ENV	0,752		
SUST_INFL_SOC	0,744		
SUST_INFL_ENV	0,682		
4	Marginal e-commerce sales conditions and characteristics	OPINION	0,759
		FIDELITY	0,667
		INSTALMENT	0,574

¹ Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Rotation converged in 7 iterations.

Source: our elaboration with IBM SPSS Statistics

The first latent factor emerging from the EFA - i.e., 'Principal e-commerce sales conditions and characteristics' - includes a broad set of variables that influence how customers perceive and engage with the fundamental elements of the e-commerce industry. It encompasses a wide range of factors crucial in shaping consumers' experiences and decision-making processes. Firstly, variables such as shipping methods (i.e., SHIP_METH), costs (i.e., SHIP_COST), and time (i.e., SHIP_TIME), along with the possibility to ship packages to a pick-up point (i.e., PICK-UP_POINT) are ground elements that directly influence the logistical aspects of online transactions. These variables reflect consumers' expectations regarding the efficiency, affordability, and flexibility of delivery options, which are pivotal in enhancing overall satisfaction and convenience. Secondly, factors such as e-commerce's brand reputation, transactions' safety, users' reviews, and customer service reputation (i.e., B_REPUT, SAFETY, REVIEW, REPUTATION) showcase the importance of trust and reliability in e-commerce platforms. These variables underscore the importance consumers attach to the credibility and security of online transactions, as well as the significance of peer feedback and customer support in shaping their purchasing decisions. Moreover, in this environment, customers tend to prioritize cost-effectiveness, product variety, and flexibility in their shopping experiences. This is reflected in their preference for competitive pricing (i.e., PRICE), a wide range of products (i.e., VARIETY), favourable return policies (i.e., RET_POLICY), discounts, and sales promotions (i.e., SALES), which foster customer engagement and loyalty in the e-commerce ecosystem. Furthermore, variables related to easy navigation through the e-commerce platform (i.e., NAV_EASY), the experience associated with navigating throughout the platform (i.e., NAV_EXP), and e-commerce

innovativeness (i.e., INNOV) underscore consumers' preferences for user-friendly interfaces, seamless browsing experiences, and innovative features that enhance overall usability and satisfaction. Notably, the inclusion of sustainability (i.e., SUST) as a variable within this latent factor suggests consumers' increasing consciousness towards such concerns as well as their growing expectations for sustainable practices and products within the e-commerce environment. This first latent factor underscores the multifaceted nature of consumers' expectations and preferences within the e-commerce domain. E-commerce platforms must prioritise factors such as efficient logistics, trustworthiness, affordability, variety, user-friendliness, and sustainability to enhance consumer satisfaction, trust, and loyalty. In particular, it is crucial for e-commerce businesses to align their strategies with current trends and preferences, placing emphasis on sustainability and ethical considerations. By doing so, they can gain valuable insights to improve their operations, provide better customer experiences, and stand out in a highly competitive market.

The second latent factor is called 'Product and sales platform sustainable features' as it reflects consumers' attitudes, preferences, and behaviours towards product and sales platform sustainability. Product sustainability preference is noticeable by the tendency to prefer a product labelled as sustainable (i.e., SUST_CERT), the willingness to pay more for such products (i.e., PROD_WTP), and the importance attached to sustainability when purchasing from e-commerce platforms (i.e., SUST_E-COM). These variables denote consumers' willingness to align their purchasing behaviours with their values and beliefs, prioritising sustainability considerations in their decision-making processes. Consumers' perceptions of e-commerce platform involvement in sustainability (i.e., PLAT_EFFORT), the willingness to pay more for product from sustainable e-commerce platforms (i.e., PLAT_WTP), and the likelihood to buy from platforms implementing sustainable practices rather than others (i.e., PLAT_SUST) underscore the importance of sales platforms' sustainability initiatives in influencing consumer perceptions and loyalty. These variables demonstrate consumers' expectations for e-commerce platforms to proactively engage in sustainable practices and transparently communicate their commitment to corporate social responsibility. Furthermore, the importance attached to the environmental, social, and economic impacts of products when purchasing online (i.e., PROD_ENV, PROD_SOC, PROD_ECO) reflects consumers' holistic understanding of sustainability and their desire for products and platforms that demonstrate positive effects across multiple dimensions. The last two variable of this factor (i.e., PLAT_TRANSP and SUST_KNOW) reflect consumers' beliefs in e-commerce platforms' transparency and commitment to sustainability, as well as their general understanding and interest in this topic. Such variables underline the role of trust, transparency, and education in fostering sustainable consumption behaviours. As a result, e-commerce platforms must integrate authentic and credible sustainability initiatives into their business models and prioritise disclosing of their actions to stakeholders. Likewise, this latent factor highlights the importance of transparency, education, and consumer engagement in promoting sustainable consumption behaviours and fostering a more sustainable e-commerce ecosystem.

The third latent factor is entitled 'Consumers' commitment toward sustainability' as it captures consumers' values, attitudes, and behaviours regarding sustainability in daily lives. It includes variables such as the importance of economic, social, and environmental sustainability in daily situations (i.e., SUST_ECO, SUST_SOC, and SUST_ENV), reflecting consumers' commitment to holistic sustainability principles, and prioritising concerns beyond mere economic factors in their everyday lives. These variables underscore consumers' propensity to integrate sustainability considerations into their decision-making processes (i.e., SUST_INFL_ENV, SUST_INFL_SOC, and SUST_INFL_ECO), and to align their actions and behaviours with their values and beliefs, indicating a genuine commitment to promoting positive environmental, social and economic impacts in everyday choices. As sustainability emerges as a guiding principle in consumers' lives, e-commerce platforms and businesses should leverage insights from this latent factor to understand better consumers' values, priorities, and decision-making processes regarding sustainability. By aligning their offerings, practices, and communications with consumers' demands, businesses can improve their brand reputation, foster customer loyalty, and drive positive social and environmental impacts by empowering consumers to make more sustainable choices in their daily lives.

The last latent factor refers to the 'Marginal e-commerce sales conditions and characteristics'. Unlike the first latent factor, which focuses on primary features influencing consumer behaviour and attitudes, the latter captures peripheral features that may have an impact - yet marginal - on consumer decision-making processes within the e-commerce landscape. The inclusion of variables such as influencers' opinions (i.e., OPINION), loyalty programs of e-commerce platforms (i.e., FIDELITY), and the possibility of instalment payments (i.e., INSTALMENT) connotes elements that, although significant, play a secondary role in shaping consumer preferences or behaviours within the e-commerce domain. These variables have lower priority than others because they are typically not considered primary considerations for most consumers when making online purchases and may not be a decisive factor for many online shoppers. However, this latent factor suggests that while loyalty programs and influencers' opinions may not be the primary determinants of consumer behaviour, they can still serve as valuable tools for enhancing customer engagement and loyalty. Additionally, offering instalment payment options may cater to specific segments of consumers who prioritise financial flexibility or budget management. Therefore, businesses should keep considering these aspects to enhance customer satisfaction, retention, and overall sales performance.

Research limitations. *This study is not without limitations, which can be mainly attributed to the sample size, its composition, and the fact that respondents are predominantly located in Southern Italy. However, it should be pointed out that this study stands as exploratory, aspiring to explore consumer behaviour regarding the topics under investigation before proceeding with more in-depth analyses.*

Managerial implications. *This study provides practical guidance for businesses operating in the e-commerce sector to enhance their sustainability practices and engage environmentally-conscious consumers. The findings emphasise the strategic importance of focusing on both product and sales platform sustainability to align with consumer preferences and promote sustainable consumption behaviours. By investing in sustainable product design, transparent communication, and eco-friendly sales channels, companies can differentiate themselves in the marketplace and build stronger relationships with customers. Moreover, the study contributes to the academic literature by empirically examining the influence of sustainability on online purchasing behaviour among Italian consumers and offering managerial implications that bridge theory and practice. Moving forward, this research lays the ground for future studies exploring cross-cultural variations in consumer attitudes towards sustainability, longitudinal analyses of shifting consumer behaviours, and evaluations of the efficacy of different sustainability initiatives in driving business success and environmental stewardship in the e-commerce landscape.*

Originality of the paper. *This research aimed to provide a comprehensive understanding of the influence of sustainability on Italian consumers' online purchasing behaviour. In particular, the study explored two crucial aspects of sustainability in e-commerce - product and sales platform sustainability - to determine which of the two dimensions has the most significant impact on consumer decisions. It represents a novel contribution to the existing literature - as prior studies have yet to address this specific topic - and its findings are expected to significantly contribute to the existing literature on the subject and pave the way for future research on e-commerce sustainability.*

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Driving Corporate Social Responsibility: Examining the Impact of Diversity and Inclusion Across Multiple Levels

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Abstract

Firms throughout the world are increasingly relying on Corporate Social Responsibility (CSR) as a key strategy to promote economic, social, and environmental well-being in the long run. The many ways in which diversity affects ESG (environmental, social, and governance) performance are investigated in this research. Diversity on the board, diversity policy at the company level, and cultural diversity in regions are all factors that we take into account and work to incorporate.

At the micro level of board diversity, we primarily depend on stakeholder theory and resource based theory; these theories give a theoretical foundation for the complex phenomena of diversity and CSR. We depend on social integration theory at the meso level. Lastly, we use institutional theory to address the macro level, for the cultural diversity in regions.

We use panel data of 573 listed companies in Germany, France, Spain, and Italy from 2013 to 2022. Regional cultural diversity, diversity initiatives at the firm level, and a diverse board all contribute to better environmental, social, and governance (ESG) results.

By highlighting the need to promote diversity within corporate governance structures and at all levels, our findings add to the body of knowledge in CSR policymaking. At both the micro and macro levels, ESG performance can be improved if policymakers use this information to create targeted measures that encourage inclusive corporate environments. In order to promote responsible and sustainable business practices that are in line with larger social objectives, this study highlights the need for lawmakers to emphasize programs that increase diversity in corporate leadership and foster inclusive workplace cultures.

Key words: *Diversity; ESG performance; Board diversity; Policy diversity; Regional cultural diversity*

Framing of the research. *A company's commitment to improving long-term economic, social, and environmental well-being through its policies, practices, and resources is known as corporate social responsibility, or CSR (Du and Vieira 2012). Corporate Social Responsibility (CSR) has become a crucial approach for businesses to interact with their stakeholders, improve their brand, and obtain a competitive edge (Elkington 1997; Esen 2013; Ozdora Aksak et al. 2016). Due to the complex relationships among stakeholders and the interconnectedness of numerous social and environmental elements, sophisticated techniques of evaluating CSR are necessary (Diez-Cañamero et al. 2020). Diez-Cañamero et al. (2020) have identified several products of this trend, including social accounting, sustainability reporting, performance measures, environmental and social norms, and ESG ratings from rating agencies.*

A number of studies have examined the effects of various factors on a firm's CSR performance, including the quality of governments (Bandeira Pinheiro et al. 2021), the characteristics of the board of directors (i.e., board independence, board size, board activity, and board diversity) (Disli et al. 2022; Menicucci and Paolucci 2022), and the firm itself (i.e., family ownership and control) (Cordeiro et al. 2020). However, it is important to acknowledge that these are only a few distinct aspects of a larger picture. We contend that there are three crucial factors to concurrently take into account in response to a call for studies that would incorporate various levels of analysis (Shin et al. 2023): board diversity (i.e., micro level), firm cultural diversity (i.e., meso level), and regional cultural diversity (i.e., macro level).

Numerous studies have shown that board features positively impact CSR initiatives at the local level (Nandy et al. 2023). It has been noted that the board of directors plays a critical role in giving the business access to resources, information, strategic guidance, and networking opportunities (Pfeffer 1972; Hillman et al. 2000; Huse 2007). It is critical to consider each board member's unique qualities (Van Ees et al. 2009). Members of a diverse board team bring a wide range of experiences, perspectives, and backgrounds to the table (Van Der Walt and Ingley 2003; Ibrahim and Hanefah 2016). Previous studies (Milliken and Martins 1996; Erhardt et al. 2003; Kang et al. 2007) have defined board diversity as variation in the membership of the board of directors (e.g., gender, age, nationality, education, and experience). According to Bear et al. (2010) and Hillman et al. (2000), a board with greater diversity is better equipped

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to understand and address sustainability and environmental efforts, which in turn improves the ESG performance. This is because a more diverse board brings a larger range of viewpoints and experiences to the table.

Diversity in the workplace at the meso level is the coexistence of people with different social origins. By utilizing the distinctive characteristics of a diverse workforce, the equal opportunity philosophy seeks to prevent talent loss and may even increase organizational productivity and efficiency (Hossain et al. 2020). A company's systematic attempts to draw in, hire, pay, and develop a diverse workforce are included in its diversity policy (Grobler et al. 2006). Previous studies have shown that different types of diversity are linked to higher levels of innovation, better strategic decision-making, and better results, especially in situations that call for sophisticated problem-solving and invention (Hossain et al. 2020). Establishing rules that support diversity on boards and provide opportunities for diversity inside organizations is essential to creating a culture that values equity and inclusivity. According to this viewpoint, fostering a diverse policy within the company may support and improve ESG performance.

An egalitarian and inclusive cultural setting is also important at the macro level (Stoermer et al. 2016; Bohren et al. 2019). As per Hofstede (2011), culture arises as a communal artifact in social contexts where people have comparable values, beliefs, and customs, which differ among different countries, sectors, and establishments. According to this viewpoint, national cultures that place a high value on diversity and equality may support and improve ESG performance. Being the first to examine the influence of the external cultural environment at the regional level, our work is noteworthy. We are better able to comprehend how regional cultural aspects affect ESG performance thanks to this regional viewpoint.

Purpose of the paper. As best of our knowledge, no research has looked at the influence of diversity on ESG performance taking into account all three levels: regional culture of diversity (macro level), company culture of diversity (meso level), and board diversity (micro level). Because of this, the goal of our research is to show how increasing diversity, regardless of level, affects a company's ESG performance.

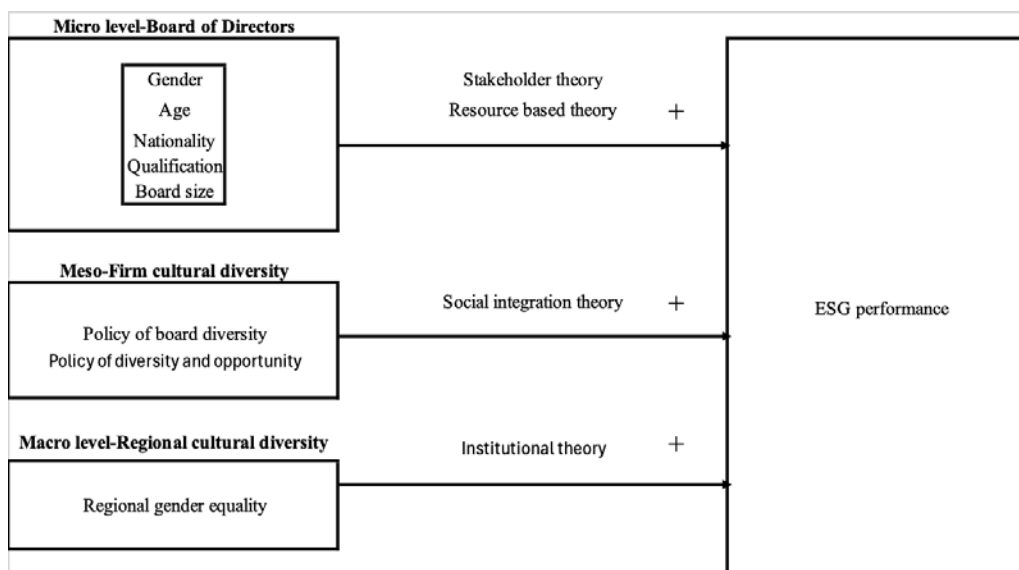
Furthermore, if only one or a small number of diversity factors are considered, the results may be biased due to the complex nature of board diversity (Zattoni and Pugliese 2021). Our study is distinct on a micro level since it considers many board characteristics, such as gender, nationality, qualification, age, and board size.

We argue that, at the meso level, using this paradigm to explore the domain of firm culture diversity helps us understand the complex interactions among variables affecting ESG performance in businesses. Establishing rules that support diversity on boards and provide opportunities for diversity inside organizations is essential to creating a culture that values equity and inclusivity. These rules act as catalysts to foster an inclusive workplace environment that values the diversity of viewpoints and backgrounds.

As the first study to examine the effects of the external cultural diversity environment at the regional level, ours stands out on the macro level. We can gain a better understanding of how local cultural elements affect corporate performance and decision-making, particularly with regard to ESG performance, by adopting a regional viewpoint. Since we think that each region has extremely distinct cultural and socioeconomic traits, we think it is crucial to look at regional diversity performance through this perspective. We hope to offer a full assessment of diversity dynamics and their consequences for business sustainability initiatives by utilizing this extensive metric.

We use a multi-theoretical framework because a single theory will not be sufficient to explain this link (Konadu et al. 2022). We mostly depend on resource-based theory (Hillman et al. 2009) and stakeholder theory (Freeman et al. 2010) at the micro level of board diversity. We use social integration theory to address corporate cultural difference at the meso level (Akintayo et al. 2023). Lastly, we use institutional theory to discuss the macro level of regional cultural variety (Scott 1987). Figure 1 shows the theoretical framework.

Fig. 1: Theoretical framework



Source: our elaboration

So our analysis spans three distinct levels of analysis (Figure 1): board diversity (i.e., micro level), firm cultural diversity (i.e., meso level), and regional cultural diversity (i.e., macro level). Each level is guided by specific theories that enable us to fully understand the interplay between diversity and ESG performance. At the micro level of board diversity, we rely mainly on stakeholder theory and resource based theory. In the meso level of firm cultural diversity, we rely on social integration theory. These theories allow us to explore how cultural diversity within the firm influences performance and innovation through the integration and social inclusion of employees. Finally, with regard to the macro level of regional cultural diversity, we draw on institutional theory. By following this theoretical approach, we gain a comprehensive and in-depth view of the role of diversity and inclusion on corporate ESG performance.

Methodology. Methodologically, we develop a panel model covering the years 2013 to 2022. We studied 573 listed firms in France, Spain, Italy, and Germany. Panel data analysis is the best technique to use when the data contains both cross-sectional and time-series elements. Because the same cross-sectional unit is polled repeatedly, our data is pooled across time and geography (Naciti 2019). For studying the ESG score, we used several linear panel regression models. Researchers examining the relationship between corporate governance and commercial success have suggested using either the initial differences or the fixed effects (inside) estimators (Andres and Vallelado 2008). However, as shown by Weisbach and Hermalin (2000), a board of directors is created endogenously. The fixed effects is inconsistent when the strict exogeneity requirement is not satisfied (inside). Fixed effects estimators are biased in the particular case of board structure because they ignore the influence of company performance on the existing board structure (Wintoki et al. 2012). A firm must wait a while to observe performance improvements following the implementation of a corporate governance system (Haniffa and Cooke 2005). In order to account for a potential endogeneity issue, we choose all independent variables with lags of one year, in accordance with Ashwin et al. (2015) and Liang et al. (2013). Random effects were used because, according to Hilbe (2011), "random-effects estimators are more efficient than fixed-effects estimators when data are from a larger population of observations, as well as when there are more panels in the data." The Hausman test confirms this choice.

We test hypotheses taking into account the effects on the ESG Score of gender, age, nationality, qualification, board size, diversity policy, RGEI and control variables.

Model 1 ESG Score = f(Token + Critical Mass + Blau + Age + Nationality + Qualification + Board Size + Policy board diversity + Policy diversity and opportunity + RGEI + Control variables)

As a robustness check, we considered several indices of ESG Score: ESG combined score, ESG environmental pillar, ESG social pillar and ESG governance pillar.

Results. This is the first research in the literature examining the relationship between diversity and corporate social responsibility (CSR), taking into account the three factors: board diversity, regional cultural diversity, and firm cultural diversity. Because of this, the goal of our research is to show how greater diversity has a positive and substantial effect on a company's CSR performance.

Initially, we looked at a number of board diversity, and each one improved ESG performance. We discover that diversity generally improves ESG performance and that, when taken into separate consideration, nationality, qualification, board size, and gender all have positive effects. Age is the only factor that is insignificant. Specifically, the data confirms that having one female director has a detrimental impact on ESG performance. According to the corpus of extant literature, a director who is a woman is seen as a symbol rather than as competent. Therefore, a single female director cannot have an impact on group dynamics or performance decisions, including ESG performance. Additionally, our statistics suggest that three female directors is sufficient. Prior research indicates that barriers that minorities perceive diminish when the number of female directors increases (Kanter 2000), and that better results result from collaborations across different groups (Wiersema and Mors 2023). Our results lend credence to the hypothesis that three is the magic number.

Secondly, we intentionally concentrate on regions within a state because we recognize the rich fabric of socioeconomic and cultural diversity that makes region unique. By taking this regional approach, we hope to learn more about the complex interactions between regional cultural diversity and economic variables that affect business dynamics, especially when it comes to ESG performance. This method enables us to get a more nuanced picture of how regional settings influence corporate behavior and sustainability strategies rather than a one-size-fits-all perspective. The beneficial impact that has been noticed highlights the crucial role that regional cultural variety plays in creating an atmosphere that is favorable for sustainable business practices. The relation shown between regional cultural diversity and ESG performance emphasizes how crucial it is to take local circumstances into account when developing sustainable business strategies.

Third, the diversity culture of the company, as evidenced by the diversity and opportunity and board diversity policies, has a favorable effect on ESG performance. This is so that varied viewpoints and experiences are encouraged in an open and equitable work environment, which is fostered by such policies. These policies improve creativity, strategic decision-making, and problem-solving abilities by encouraging diversity in board and organizational decision-making processes. Furthermore, a varied staff is better able to comprehend and address the intricate and dynamic sustainability issues that

modern firms face. As a result, firms with strong diversity policies are in a better position to incorporate ESG factors into their daily operations, which leads to improved ESG performance.

Research limitations. There are several restrictions on this study. Our analysis first focuses on listed firms in some States of the European Union; however, it would be intriguing to broaden the study to unlisted companies and investigate other geographical contexts in the future. Due to a dearth of trustworthy data, it has not been possible to date. Second, internal company factors like other director attributes like tenure and whether or not they have an executive position could have an influence on our findings and should be taken into account going forward.

Managerial implications. Our study's findings have significant implications for both managerial and policy domains. We delve into the realm of ESG, shedding light on crucial factors that can inform policymaking and managerial decision-making processes.

Firstly, we emphasize the importance of diversity and inclusion within corporate governance structures. Our findings suggest that policymakers can utilize this information to craft more effective ESG policies that encourage companies to adopt practices promoting diversity and inclusion. Diversity and inclusion have gained increasing recognition as crucial elements of sustainable and responsible business practices, making this particularly significant. We can thus prioritize initiatives aimed at fostering diverse and inclusive corporate cultures, which not only align with societal values but also contribute to improved ESG performance.

Moreover, our research underscores the importance of considering regional cultural factors when designing ESG policies. This insight implies that a one-size-fits-all approach to ESG may not be effective, as cultural nuances play a significant role in shaping attitudes towards ESG practices. We can use this understanding to tailor interventions that resonate with the specific cultural contexts of different regions, thereby ensuring the relevance and effectiveness of ESG initiatives on a local scale.

Furthermore, our study highlights the positive correlation between diversity, and ESG performance. This provides a compelling rationale for policymakers to prioritize initiatives aimed at promoting diversity in corporate leadership and fostering inclusive workplace cultures. By doing so, we can not only enhance ESG performance but also contribute to broader societal goals of equity and social justice.

Our research offers actionable guidance for policymakers seeking to advance sustainable and responsible business practices. By emphasizing the importance of diversity at all levels, and regional cultural factors in shaping ESG policies and practices, we provide valuable insights that can inform strategic decision-making processes at both the firm and regional levels. Ultimately, this can lead to the creation of more inclusive and equitable business environments, thereby fostering sustainable development and societal well-being.

Originality of the paper. In our study, we aim to significantly advance the existing understanding of how diversity at all level contribute to enhancing ESG performance within organizations. To achieve this, we adopt a comprehensive approach by examining multiple dimensions of diversity simultaneously. These dimensions encompass age, nationality, qualifications, gender, and board size, allowing us to paint a detailed picture of the interplay between various diversity factors and ESG outcomes.

Moreover, we delve deeper into the complexities of diversity by considering the influence of both regional cultural diversity and firm culture diversity. By examining how these contextual factors shape organizational dynamics, we gain valuable insights into the ways in which diversity manifest and impact ESG performance.

Our findings highlight the critical importance of considering a broad spectrum of diversity factors when assessing their relationship with ESG performance. Specifically, we emphasize the need to account for the extent of gender diversity on boards, recognizing its significance as a key determinant of organizational success in the realm of ESG.

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From Dominance to Responsibility. The integration of Corporate Social Responsibility in *Chaebol*'s Corporate Governance

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Abstract

This study explores the profound influence of Chaebols-large, family-owned conglomerates-on South Korea's economic transformation from an agrarian to an industrial powerhouse since the 1960s. Representing over 84% of the country's GDP while employing a mere 10% of the workforce, Chaebols such as Samsung, Hyundai, LG, and SK Group have been pivotal in South Korea's development. However, their monopolistic dominance and the controversies surrounding their practices have sparked significant public and academic scrutiny, especially regarding their Corporate Social Responsibility (CSR) initiatives. By conducting a comprehensive review of the current literature, this analysis seeks to uncover the strategic integration of CSR within Chaebol corporate governance (CG) and assesses the extent to which the Korean government encourages socially responsible business conduct. This inquiry is essential for appreciating the nuanced role of Chaebols in the socio-economic landscape of South Korea, emphasizing the intricate balance they navigate between profitability and their commitment to ethical, sustainable practices.

Key words: *Chaebols, Corporate Governance (CG), Corporate Social Responsibility (CSR), South Korea, Government.*

Framing of the research.

Unveiling the Economic Significance of South Korea's Chaebols

This research framework aims to dissect the intricate relationship between large family-owned conglomerates in South Korea, known as Chaebols, and their engagement in Corporate Social Responsibility (CSR) practices. These conglomerates, which emerged as pivotal to South Korea's rapid transition from an agrarian to an industrial economy since the mid-1960s, have garnered significant economic influence and political connections. Chaebols such as Samsung, Hyundai, LG, and SK Group, which collectively contribute a substantial portion of the nation's GDP yet account for a smaller share of employment, are at the center of this investigation (Moskalev & Park, 2010).

Given the concentrated control exerted by founding families over these conglomerates and the preferential treatment they have received from government policies aimed at creating globally competitive businesses, Chaebols have been subject to both national adulation for their role in economic development and criticism for perpetuating economic disparities and engaging in corrupt practices (Campbell II & Keys, 2002; Andolfo, 2018; Lee et al., 2019). This dichotomy presents a fertile ground for examining how Chaebols navigate the realm of CSR as a means of enhancing or protecting their reputation amidst challenges to their credibility and public perception.

CSR is conceptualized in this framework as corporate actions that surpass the legal or regulatory benchmarks in the market or economy, focusing on activities that contribute to the sustainable growth of societies across five dimensions: environmental, social, economic, stakeholder, and voluntariness (Kitzmueller & Shimshack, 2012; Lee et al., 2019). This definition provides a comprehensive lens through which the CSR initiatives of Chaebols can be assessed, understanding them not merely as legal obligations but as voluntary efforts towards societal well-being.

The research seeks to construct a dual-purpose framework. Firstly, it endeavors to elucidate how Chaebols incorporate CSR into their strategic planning and operational practices during the period from 60' to nowadays.

Secondly, the framework aims to explore the role of the Korean government in promoting CSR among Chaebols, investigating the presence of incentives and support mechanisms that encourage these enterprises to adopt and implement socially responsible practices.

Purpose of the paper. *The purpose of this study is to conduct a theoretical analysis of the South Korean literature and context, focusing on the historical evolution of the behaviors of Chaebols and the South Korean government concerning CG and CSR from the 1960s to the present. By tracing these developments over time, this paper aims to illuminate the historical trajectory that has led to the current state of affairs in these areas. By reviewing current literature, this research aspires to provide a nuanced understanding of CSR within the unique context of South Korean Chaebols. It intends to offer insights into how these powerful entities balance economic ambitions with social and environmental responsibilities, and the extent to which government support facilitates this process.*

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The Chaebol Matrix: Exploring the Dynamics of Ownership, Diversification, and Political Ties

In the early 1960s, South Korea was among the poorest nations globally, with a Gross National Product (GNP) per capita. This period marked South Korea's struggle with economic hardship in the aftermath of the Korean War, highlighting the daunting challenges of rebuilding a nation from the ashes of conflict (Kim, 2013). The transformative journey of South Korea from this state of impoverishment to becoming an economic powerhouse is a testament to strategic policy implementation and industrial resilience. The turning point came with the government's initiation of comprehensive economic policy reforms aimed at promoting rapid industrial growth. By encouraging private ownership and providing financial and non-financial incentives to businesses aligned with national development goals, South Korea laid the foundation for its future economic expansion.

The regulatory landscape in South Korea, particularly the limitations on commercial bank ownership, compelled Chaebols to adopt unique financial strategies. These strategies included heavy reliance on internal funding mechanisms and investments in non-bank financial institutions (Almeida et al., 2015; Kim et al., 2004; Kim et al., 2010; Kim, 2017). Additionally, Chaebols have been known to support financially struggling affiliates, prioritizing them over more solvent entities through a process known as propping or negative tunneling (Bae et al., 2008). This financial maneuvering was notably pronounced in the 1970s, as the Korean government directed substantial support to the largest Chaebol groups via state-owned banks, often at the expense of smaller and medium-sized enterprises (Haggard and Moon, 1990). These government-backed initiatives enabled Chaebols to evolve into multinational corporations with considerable global influence, making entities like Samsung and Hyundai synonymous with Korean economic development.

Chaebols are large, family-owned business conglomerates with operations spanning various industries, characterized by their strong ties with the government (Kim, 2013). An overview of prominent Chaebols includes, Samsung Group, Hyundai Group, SK Group, LG Group, Lotte Group, Hanwha Group, GS Group, CJ Group, Doosan Group, conglomerates with great diversification in their industry activities. Chaebols represent the backbone of South Korea's economic ascent to global prominence, embody a unique fusion of CG, diverse business ventures, and deep governmental ties. Central to their governance is the profound influence of founding families, who, through a complex web of cross-shareholdings, maintain control over their vast networks with minimal direct ownership. This family-centric leadership is pivotal in charting the conglomerates' strategic directions and sustaining their dominance across various sectors. Chaebols' strategic diversification into industries ranging from electronics and automotive to finance and construction underpins their resilience and capacity for innovation, enabling them to capitalize on new market opportunities.

The symbiotic relationship between chaebols and the South Korean government has been instrumental to their success, fostering an environment conducive to rapid industrial growth while shielding them from foreign competition. However, this relationship has sparked controversy, with criticisms over the chaebols' preferential treatment prompting calls for regulatory reforms to ensure a fairer business landscape. Despite such debates, the indelible mark of chaebols on South Korea's transformation into a high-tech economy is undeniable. As South Korea evolves, so does the discourse on chaebols' future, particularly regarding their governance structures and government relations. Efforts are underway to align their operations more closely with principles of CSR, addressing concerns over market competition, economic disparity, and CG. These reforms aim to temper family control, enhance transparency, and cultivate a competitive economy, ensuring chaebols continue to drive South Korea's economic narrative forward in a manner that is both ambitious and equitable.

Methodology. *This study employs a theoretical methodology, navigating through the landscapes of existing literature and conceptual frameworks to carve out new understandings within Chaebols, CG, and CSR. Our approach is rooted in the critical analysis and synthesis of established knowledge, aiming to identify and bridge current situation. This process is pivotal, as it not only anchors our investigation in the rich soils of existing academic discourse but also illuminates areas ripe for exploration and development. This methodology allows for a dynamic interplay between theory and context, with the aim to contribute to the academic conversation on Chaebols, CG and CSR.*

Ethics in Action: The Role of Corporate Governance and Social Responsibility in Contemporary Business Practices

The evolution of CG is a complex and multifaceted journey that has significantly evolved from its early stages to the present day. Initially, CG was narrowly focused, primarily centered on the interests of shareholders, reflecting a limited view of the corporation's purpose and the scope of its responsibilities. Magnan & Michelon (2024) describe this early period as one where the emphasis was squarely on shareholder value, aligning with the foundational principles of agency theory. This theory posits the central role of shareholders in the corporate hierarchy, emphasizing the need for oversight over managerial decisions and actions to mitigate the risks associated with the separation of ownership and control.

As the corporate landscape evolved, particularly with the transition from smaller, entrepreneurial ventures to larger, professionally managed organizations in the late 1920s and early 1930s, the scope of CG began to widen (Magnan & Michelon, 2024). This shift recognized the complexity of modern corporations and the diverse interests that they must serve beyond those of their shareholders. It marks a pivotal transition towards a more inclusive understanding of CG, acknowledging the broader societal role that corporations play.

This expanded view of CG incorporates a stakeholder-oriented model, moving away from a strict focus on shareholder interests to include a wide range of stakeholders, including employees, customers, suppliers, and the broader community (Roberts & Van den Steen, 2000; Solomon, 2020). This approach is based on the premise that corporations have a duty not only to their owners but also to the societies in which they operate, reflecting a comprehensive accountability

framework. It encompasses legal obligations, corporate regulations, and informal practices that ensure the alignment of corporate actions with the broader goal of societal well-being.

The concept of sustainability has become increasingly important in this context, responding to the demands of stakeholders for corporations to address their social and environmental impact. This has led to the inclusion of environmental, social, and governance (ESG) standards as critical components of CG, highlighting the importance of sustainable practices not only for their intrinsic value but also for their role in enhancing firm performance and long-term viability (Iansiti & Levien, 2004).

Moreover, the role of the board of directors has been a subject of significant scrutiny and evolution. Researchers like Brickley and Zimmerman (2010), and Hillman et al. (2000), have highlighted the dual functions of boards: overseeing operations and providing strategic counsel. The blend of agency theory and resource-dependence theory offers a nuanced understanding of the board's role, underscoring its centrality in shaping corporate strategy and ensuring accountability.

Magnan and Michelon (2024) identify four critical historical milestones that have shaped the trajectory of CG: the aftermath of the Great Depression and the introduction of key financial regulations in the United States, the post-World War II era in Europe, the financial scandals of the late 20th century in the UK, and the early 21st-century financial misdeeds leading to the Sarbanes-Oxley Act. As CG continues to evolve, it faces the challenge of balancing the traditional shareholder-centric model with the demands of a broader set of stakeholders, including addressing environmental and social challenges. The rise of ESG standards and the increasing focus on sustainability reflect a significant transformation in how corporations conceptualize their roles and responsibilities.

The Convergence of Corporate Governance and Social Responsibility Through CSR

Fifty years since Milton Friedman (1970) controversially claimed that corporate social responsibility was essentially a misallocation of resources, the discourse around business practices and sustainability has undergone a significant transformation. Friedman's assertion that the costs of implementing socially responsible policies were unjustifiably high and detrimental to shareholder interests has been subject to critical reassessment in recent years. Contrary to Friedman's viewpoint, Brammer and Millington (2008) argue that the narrative is more nuanced, with modern companies demonstrating that sustainable practices can coexist with, and even enhance, economic performance. These enterprises, by prioritizing the quadruple bottom line of people, planet, prosperity, and partnership, showcase the possibility of delivering high-quality performance while also fostering sustainable value creation (Martínez-Perales et al., 2018).

The introduction of the concept of sustainable development in the Brundtland Report (1987) by the World Commission on Environment and Development marked a crucial moment, that emphasized the interconnectedness of economic, environmental, and social well-being as essential components of true sustainable development.

Over time, sustainable development has evolved into the broader, more encompassing concept of sustainability, integrating environmental, economic, and social dimensions (Johnston et al., 2007; Shenhar & Dvir, 2007). The culmination of this evolution is the 2030 Agenda for Sustainable Development, adopted by the United Nations in 2015. The Agenda challenges companies to transform their supply chains, manufacturing technologies, investment approaches, consumer behaviors, and overall business models to align with the SDGs (Martens & Carvalho, 2016). This entails a significant shift in CG strategies, incorporating social and environmental considerations into decision-making processes that have traditionally prioritized economic outcomes (Thamhain, 2014).

Adopting a stakeholder-oriented approach, modern CG practices must balance economic objectives with environmental stewardship and social responsibility, embodying the triple bottom line framework proposed by Elkington and Rowlands (1999) and supported by Freeman & Dmytriiev (2017). This approach necessitates a reevaluation of corporate performance metrics to include social justice, economic prosperity, and environmental quality as key indicators of success. Practically, this shift towards sustainability in CG involves careful management of resources and outputs to minimize environmental impact, alongside implementing organizational practices that promote social well-being (Alsayegh et al., 2020). In this context, businesses are recognized not only as drivers of economic growth but also as leaders in the global transition towards sustainability, with the potential to create long-term value that benefits the environment, society, and future generations beyond mere financial gains (Sánchez, 2015). This comprehensive approach challenges the initial skepticism around the costs of sustainability, suggesting that the investments made today are crucial for securing a sustainable, prosperous future for all.

Results.

How Chaebols Are Embracing Social Accountability in Corporate Governance

The relationship between Chaebols and CSR offers a distinctive lens through which to examine CG and ethical business practices within these powerful conglomerates. Chaebols as key players in South Korea's extend their influence from economic realms into socio-political spheres, impacting societal and environmental well-being (Ryu & Chae, 2022). The scrutiny of Chaebols in relation to CSR delves into their contribution to social obligations, ethical considerations, and the broader implications of corporate dominance (Ben-Shahar et al., 2023; Lee et al., 2019). Chaebols are closely intertwined with South Korea's economic narrative, emerging from government strategies to foster industrialization through substantial financial support and policy advantages. Despite their significant contributions to transforming South Korea into a global economic powerhouse, their expansion has been shadowed by controversies including monopolistic

practices, nepotism, and a lack of transparency (Kim, 2013). The concentration of power within family-owned structures has sparked debates around economic inequality and corporate ethics.

CSR, broadly defined as a self-regulating model enabling companies to be socially accountable, encompasses a commitment to contribute positively to society beyond legal obligations. It includes a range of activities from environmental sustainability efforts to ethical labor practices, with a growing global emphasis on transparency and ethical accountability (Crane et al., 2008; Lockett et al., 2006; Ryu & Chae, 2022). In the South Korean context, Chaebols have traditionally prioritized economic growth, sometimes overlooking social and environmental responsibilities. However, recent shifts towards embracing CSR reflect global trends and a desire to enhance their public image (Lee et al., 2019; Choi & Hong, 2022). Notable conglomerates like Samsung, Hyundai, LG, and SK Group have embarked on various CSR initiatives, reflecting an evolving approach towards integrating social value into their business models. Samsung, for example, has invested in education and environmental sustainability, attempting to create social value despite facing criticism over labor practices and environmental impacts (Chang et al., 2019). Hyundai's community engagement efforts span global health and educational programs, though they face critiques over their promotional nature (Rhee et al., 2017; Ryu & Chae, 2021). LG's CSR initiatives aim to enhance quality of life, with programs addressing healthcare, education, and environmental stewardship (Jun & Kim, 2021; LG, 2023). SK Group's dedication to creating social value encompasses a wide range of sectors, emphasizing a double bottom line philosophy that seeks economic and social value growth (SK, 2023).

Despite these efforts, the authenticity and effectiveness of Chaebols' CSR practices remain contentious. Critiques often center on the superficial nature of some initiatives, perceived more as image management tools than genuine commitments to social responsibility. In fact, the centralization of control within Chaebol families raises concerns about transparency, accountability, and potential conflicts of interest, highlighting ethical dilemmas in balancing profit-making with societal responsibilities (Campbell II & Keys, 2002; Krueger & Yoo, 2002).

Incentives and Innovations: The Role of Government Support in Shaping Chaebol CSR Activities

The interplay between Chaebols and CSR within South Korea presents a dynamic and intricate picture of evolving business ethics and governance. This evolution, influenced by both global trends and domestic pressures, showcases a gradual but significant shift toward embedding social responsibility into the fabric of corporate operations. However, challenges persist, particularly concerning the authenticity and depth of CSR initiatives, which often struggle to transcend their image as mere public relations strategies to genuinely integrate into the core ethos of conglomerates (Ryu & Chae, 2021).

Chaebols' CSR efforts have historically focused on philanthropy and corporate community relations, encompassing charitable donations and volunteerism led by CEOs and employees. However, the timing of these donations, often following legal convictions of owners for various offenses, has raised questions about the motivations behind such philanthropy. These actions have sparked skepticism, with CSR activities seen as attempts to divert attention from misdemeanors and rehabilitate corporate images rather than genuine efforts to contribute positively to society (Choi & Aguilera, 2009).

Despite these criticisms, there has been a notable push from both the government and the corporations themselves towards more integrated and strategic CSR approaches. Following the Asian financial crisis, the Korean government has played a fundamental role in promoting CSR among major corporations through legislation, guidelines, and initiatives aimed at fostering accountability, ethical conduct, and sustainable development. This includes the formation of committees and institutions dedicated to sustainability management, such as the Business Institute for Sustainable Development, and initiatives to bridge the gap between large corporations and small to medium-sized enterprises (SMEs) (Nam, 2011).

Moreover, the government's efforts have led to the establishment of the Korea Institute of Corporate Governance and Sustainability (KCGS), signifying a deepened commitment to integrating sustainability into corporate governance. KCGS plays a central role in guiding companies toward sustainable growth by evaluating their governance, environmental, and social practices (Choi et al., 2024).

Despite these advances, Chaebols, face ongoing scrutiny over their CSR practices. The central critique revolves around the perception that CSR remains peripheral to their primary business operations, lacking integration into their foundational beliefs and strategic planning. This situation highlights a broader issue within the Korean corporate sector, where economic and social disparities persist, and stakeholder concerns are often sidelined in favor of economic growth (Nam, 2011).

Research limitations. The trajectory of CSR in South Korea, especially among Chaebols, reflects a complex blend of progress and ongoing challenges. While there has been a commendable increase in the diversity and number of initiatives, questions about the sincerity and impact of these efforts persist. The establishment and evolution of entities like KCGS underscore a growing recognition of the importance of sustainable and ethical business practices. Yet, the journey towards fully integrating CSR into the core of corporate identity and operations remains ongoing. As South Korea continues to navigate this landscape, the collective efforts of the government, corporations, and civil society will be crucial in shaping a more responsible and sustainable corporate sector.

Managerial implications. For managers navigating the intricate dynamics between Chaebols and Corporate Social Responsibility (CSR) within South Korea, several strategic implications arise, emphasizing the need for a nuanced approach to CSR. Firstly, managers are encouraged to recognize CSR as a strategic asset beyond a mere public relations tool, aligning initiatives with the company's core mission and competencies to address pertinent societal and

environmental challenges, thereby enhancing long-term sustainability, stakeholder trust, and corporate reputation. Secondly, given the skepticism surrounding CSR motivations, particularly those coinciding with legal issues, there is a critical need for transparency and accountability in CSR reporting and communication. Articulating clear objectives, activities, and impacts can significantly mitigate cynicism, fostering genuine public trust. Thirdly, proactive engagement with regulatory frameworks and institutions like the Korea Institute of Corporate Governance and Sustainability (KCGS) underscores the importance of aligning business practices with national sustainability goals, adopting and reporting on Environmental, Social, and Governance (ESG) standards to meet corporate success criteria. Lastly, the integration of CSR into strategic planning and operational processes is paramount. This approach not only addresses broader socio-economic disparities and stakeholder concerns but also aligns the company's economic growth objectives with societal well-being, ensuring CSR becomes a central element of business development and innovation.

Originality of the paper. This study offers an original exploration into the dynamic interplay between South Korea's Chaebols and their CSR engagements, highlighting the evolution of business practices. By focusing on the transformational role of Chaebols from the 1960s to the present, this research delves into the complexities of their economic dominance and societal impact within South Korea's rapid industrialization context. The investigation into how Chaebols integrate CSR into their strategic ethos and the government's role in promoting such practices provides fresh insights into the balancing act between economic growth and social responsibility and offers a distinct perspective on the intertwining of corporate ethics, governance, and societal well-being in a uniquely South Korean setting. This endeavor not only enriches the academic discourse on CSR but also contributes to understanding the nuanced relationship between corporate power, governmental influence, and societal expectations in the modern global economy.

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Sustainability Alignment in Cross-Border Collaborations: Dynamics, Challenges and Limits

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Abstract

Today, achieving sustainability alignment between firms across developed and underdeveloped economies is essential for fostering fair and resilient partnerships amidst growing global economic and industrial interconnectedness (Bakkari et al., 2022; Kuznets, 1968). Collaboration between business realities of varying economic statuses is vital across sectors to tackle urgent sustainability issues (Berkhout et al., 2010; Asgary & Zahedi, 2009), and failure to align sustainability goals risks neglecting local needs, leading to social unrest (UNGC, 2020). This ongoing research explores the complexities of achieving sustainability alignment in cross-border collaborations, focusing on supply chains and mergers and acquisitions (M&A). Specifically, it examines how sustainability accounting influences alignment between large enterprises in developed economies and counterparts in underdeveloped regions, using a mixed-methods approach: quantitative analysis of financial and sustainability data is complemented by qualitative insights from interviews and surveys with stakeholders, aiming to capture diverse perspectives. The findings will contribute to theoretical understanding and managerial practice by highlighting the importance of integrating sustainability into supply chain strategies and M&A decision-making to promote sustainable alignment and well-being for individuals and society. However, limitations exist, primarily in generalizing findings beyond the studied regions and acknowledging inherent biases and data limitations in the research approach.

Key words: sustainability alignment; cross-border collaborations; M&A; supply-chain; underdeveloped countries.

Framing of the research. In the contemporary global landscape, the imperative of achieving sustainability alignment among firms operating across developed and underdeveloped economies has emerged as a fundamental prerequisite for fostering equitable and resilient partnerships amidst escalating interconnectivity (Demstus & Landrum, 2024; Burnes & James, 1995). This urgency underscores the critical necessity for collaborative endeavors between entities of divergent economic statuses to address pressing sustainability challenges across various sectors (Bakkari et al., 2022; Wiczorek, 2018). For example, within the textile industry, multinational corporations headquartered in developed nations frequently collaborate with manufacturers in underdeveloped economies for sourcing raw materials or outsourcing production processes (Handfield et al., 2005; Kuznets, 1968). In such collaborations, attaining sustainability alignment is paramount to ensure adherence to fair labor practices, mitigate environmental impact, and foster community development within regions where manufacturing activities are concentrated (Bakkari et al., 2022; Beamon, 1999). The absence of shared sustainability objectives and strategies poses a significant risk of perpetuating exploitative labor practices or exacerbating environmental degradation, thus compromising the resilience of the entire supply chain (Capasso & Pellegrino, 2016; Handfield et al., 2005). Similarly, in the renewable energy sector, partnerships between established energy firms from developed economies and emerging enterprises in underdeveloped nations play a pivotal role in extending access to clean energy sources (Berkhout et al., 2010; Seuring & Müller, 2008). Here, sustainability alignment assumes utmost importance to ensure that investments contribute to local economic development, empower communities, and mitigate climate change impacts (Capasso & Pellegrino, 2016; Seuring & Müller, 2008).

This imperative for sustainability alignment is further underscored by the discourse within the sustainability transition literature, which represents a rapidly growing and influential field of research (Chappin & Ligtoet, 2014; Markard et al., 2012). This literature builds on the argument that addressing interconnected, complex global challenges, such as climate change and social inequalities, necessitates a radical transformation in the fundamental systems that provide for societal needs (Schot & Kanger, 2016). This transformation is conceptualized as a “transition”, and the systems

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undergoing change are understood as socio-technical in nature, encompassing technology, institutions, economy, and socio-cultural aspects (Grin et al., 2010; Elzen et al., 2010; Wieczorek & Berkhout, 2009).

Given its potential to address sustainability challenges, the concept of socio-technical transition has gained traction in policy circles, where policymakers are increasingly interested in fostering transitions rather than relying solely on incremental, technical changes or end-of-pipe solutions (Hunter & De Giacomo, 2023; Wieczorek & Elzen, 2005). Various models developed within this field aim to elucidate the dynamics of transition and offer guidance on effective governance strategies. One such foundational model is the Multilevel Perspective on system innovation (MLP) (Markard et al., 2012; Geels, 2002). The MLP posits that system transformation occurs within the interplay of three levels:

- niches;
- regimes;
- landscapes.

The central level comprises socio-technical regimes, which are sets of rules and routines defining the dominant “way of doing things” (Geels, 2002). These regimes are characterized by path-dependence, stability, and often being locked-in, which impedes radical change. The stability of regimes is upheld by the socio-technical landscape, an exogenous environment beyond direct actor influence, encompassing processes like urbanization, demographic changes, wars, or crises, which can pressure regimes and render them vulnerable to radical changes (Geels & Schot, 2007; Geels, 2002).

In both the concept of transition and the imperative for sustainability alignment, there is a fundamental recognition of the need for transformative change to address pressing societal challenges (Wilkinson & Coles, 2024). This parallel underscores the interconnectedness of global issues and the necessity for coordinated action across diverse contexts. The concept of transition, as elucidated in the reference literature, emphasizes the need for systemic transformation to achieve sustainability goals (Chappin & Ligtvoet, 2014; Markard et al., 2012). Similarly, sustainability alignment in partnerships between firms from developed and underdeveloped economies entails a concerted effort to ensure that investments and practices contribute positively to local development, community empowerment, and environmental stewardship (Schilling & Seuring, 2024; Capasso & Pellegrino, 2016; Seuring & Müller, 2008).

Moreover, just as the transition literature highlights the role of socio-technical regimes and niches in driving systemic change (Grin et al., 2010), sustainability alignment recognizes the importance of establishing common goals and strategies within partnerships to overcome entrenched practices and foster innovation (Bakkari et al., 2022; Wieczorek, 2018). Some studies have further emphasized the significance of proactive governance and strategic management in both transitions and sustainability alignment efforts (Vargas-Hernandez, 2018; Fischer & Newig, 2016). For instance, Strategic Niche Management (SNM) has been identified as a key approach for guiding the process of niche formation and facilitating the emergence of sustainable innovations within transitions (Schot and Geels, 2008; Raven, 2005; Kemp et al., 1998). Similarly, effective governance mechanisms and collaborative decision-making processes are essential for ensuring sustainability alignment in partnerships, as they enable stakeholders to navigate complexities, mitigate risks, and capitalize on opportunities for positive change (Berkhout et al., 2010; Handfield et al., 2005). In the context of supply chain management (SCM) and mergers and acquisitions (M&A) literature, the parallels with sustainability transitions and alignment are particularly noteworthy. These, in fact, often involve complex interactions across socio-economic and environmental dimensions, echoing the systemic changes advocated in the transition literature (Bottazzi, 2019).

Within the SCM literature, there is increasing recognition of the importance of sustainability considerations in shaping supply chain strategies (Handfield et al., 2005). Similarly, sustainability transition literature emphasizes the need for systemic changes to address global challenges, such as climate change and social inequalities (Markard et al., 2012). This convergence underscores the shared imperative of aligning supply chain practices with sustainability goals to mitigate environmental impact, ensure fair labor practices, and promote community development (Bakkari et al., 2022; Bozeman & Griffith, 2004). On the other hand, in the realm of M&A activities between firms from different economic contexts, sustainability considerations are becoming increasingly prominent. Studies in the M&A literature highlight the potential of mergers and acquisitions to drive sustainability outcomes, such as improved environmental performance and stakeholder engagement (Capasso & Pellegrino, 2016). This aligns with the sustainability alignment discourse, which emphasizes the importance of shared green objectives and strategies in fostering equitable and resilient partnerships (Wieczorek, 2018).

Moreover, sustainable disclosure and reporting practices play a crucial role in both SCM and M&A contexts (Feng et al., 2023). In fact, firms engaging in cross-border collaborations often face pressures to disclose their environmental, social, and governance (ESG) performance to stakeholders (Global Reporting Initiative, 2020; Davis & Boulet, 2016). Similarly, sustainability transition literature emphasizes the importance of transparent reporting mechanisms to track progress and hold stakeholders accountable for sustainability commitments (Chappin & Ligtvoet, 2014). Recent studies have highlighted the strategic significance of sustainable disclosure and reporting practices in enhancing the credibility and trustworthiness of firms operating in diverse economic contexts (Berkhout et al., 2010). By providing transparent and standardized information about their sustainability performance, firms can demonstrate their commitment to responsible business practices and build trust with stakeholders. Furthermore, sustainable disclosure practices serve as a crucial mechanism for facilitating sustainability alignment among firms engaged in collaborations spanning developed and underdeveloped economies, consequently fostering improved performance at both the organizational and macroeconomic levels. In fact, these practices have the potential to catalyze positive outcomes for economies in underdeveloped countries (Berkhout et al., 2010), and also contribute to the establishment of robust governance mechanisms and the promotion of responsible business conduct within these economies (Bakkari et al., 2022). As firms operating in underdeveloped countries align their practices with sustainability objectives, they can mitigate

environmental risks, promote social inclusion, and stimulate economic growth in local communities (Handfield et al., 2005). This alignment not only enhances the resilience and competitiveness of individual firms but also contributes to the broader development agenda of these economies, fostering sustainable and inclusive economic progress (Io Conte & Sancetta, 2024; Dutta et al., 2012).

However, unlike their counterparts in developed economies, these firms may encounter barriers such as limited resources, capacity, and institutional frameworks for reporting sustainable activities (Bakkari et al., 2022). Moreover, the lack of established reporting mechanisms may result in inconsistencies and discrepancies in the disclosure of sustainable activities, limiting transparency and comparability across firms and industries (Capasso & Pellegrino, 2016). Without clear guidelines and reporting structures, firms in underdeveloped economies may struggle to communicate their sustainability efforts to stakeholders, hindering their ability to build trust and credibility in global markets (Mc Loughlin et al., 2023). In light of these challenges, there is a pressing need for concerted efforts to address the gaps in sustainable disclosure frameworks and support capacity-building initiatives (Norton et al., 2015). In fact, as stated by Parisi, 2013, by providing technical assistance, training programs, and resources tailored to the specific needs of firm, stakeholders can empower these entities to adopt sustainable disclosure practices effectively (Parisi, 2013).

Purpose of the paper. Our ongoing research aims to delve into the challenges associated with attaining sustainability alignment within the context of cross-border business collaborations. Specifically, we concentrate our focus on the interplay of supply chain interactions and merger and acquisition (M&A) activities. Moreover, we endeavor to analyze the impact of sustainability accounting practices on the process of aligning sustainability objectives and strategies between major corporations situated in developed nations, such as the United Kingdom, and their counterparts in underdeveloped economies, represented by countries like Pakistan, Bangladesh, and Sri Lanka. These partnerships, in fact, offer opportunities for knowledge transfer, capacity building, and access to resources and expertise that can enable firms to strengthen their sustainability initiatives and reporting capabilities (Schilling & Seuring, 2024). Also, participation in supply chains managed by firms from developed economies provides firms in underdeveloped ones with exposure to international markets and compliance requirements related to sustainability (Seuring & Muller, 2008). This exposure prompts firms to align their operations with global sustainability standards and expectations, driving improvements in environmental stewardship, social responsibility, and corporate governance practices. Besides, firms in underdeveloped economies can enhance their competitiveness, attract investment, and build trust with consumers, investors, and other stakeholders.

Our research also aims to investigate how green reporting practices contribute not only to the alignment of sustainability goals but also to broader positive effects on resilience, society, economy, and governance mechanisms. In fact, sustainable reporting alignment encompasses more than just the convergence of sustainability objectives; it extends to fostering resilience in the face of environmental and social challenges, enhancing societal well-being through responsible business conduct, stimulating economic development through sustainable practices, and improving governance mechanisms (Schilling & Seuring, 2024). The positive effects of sustainability alignment facilitated by sustainability accounting practices could extend to enhancing better work conditions, representation, and rights for workers. This alignment often entails commitments to uphold international labor standards set forth by organizations like the International Labour Organization (ILO), along with the implementation of policies and practices aimed at empowering workers and facilitating their participation in decision-making processes (Shamim et al., 2017). Moreover, sustainability alignment may prompt increased investment in training and skills development programs, providing workers with opportunities for career advancement and personal growth. Through these efforts, firms prioritize the well-being and rights of their workforce, fostering a positive work environment conducive to heightened productivity, innovation, and employee satisfaction.

In light of this, we can express our first Research Question as follows:

- **RQ1:** How do cross-border collaborations influence sustainability alignment between large firms in developed economies and their counterparts in underdeveloped ones, and what are the mechanisms through which this alignment contributes to the achievement of sustainable development goals?

For this research question, we propose a quantitative analysis methodology. On the other side, the second Research Question of our study can be express as follows:

- **RQ2:** How do sustainability accounting practices facilitate sustainability alignment, and to what extent do these practices contribute to enhanced environmental, social, and economic outcomes, including impacts on society?

To address this question comprehensively, a mixed-methods approach will be employed. In developed economies, large enterprises often prioritize sustainability reporting due to regulatory requirements, stakeholder expectations, and reputational concerns. However, in underdeveloped regions, factors such as limited resources, lack of awareness, and institutional barriers may hinder the adoption of these practices. Nonetheless, there are several elements that can incentivize these firms to follow the reporting practices of their counterparts. These could include access to international markets, attracting foreign investment, enhancing credibility and trust among stakeholders, and improving competitiveness in a globalized economy.

Methodology. Our research adopts a dual-methodological approach to comprehensively investigate the dynamics of sustainability alignment within cross-border business collaborations.

- Firstly, a quantitative analysis methodology is proposed to delve into the influence of cross-border collaborations on sustainability alignment between large firms and their counterparts in underdeveloped regions. This part will involve the collection and analysis of numerical data, also using a structured questionnaire based on relevant literature and theoretical frameworks. The questionnaire will encompass key variables such as the nature and extent of cross-border collaborations, sustainability objectives and strategies, and perceived outcomes in terms of sustainable development goals. Sampling techniques will be employed to select a representative sample of large firms from developed nations, such as the United Kingdom, and underdeveloped regions, including Pakistan, Bangladesh, and Sri Lanka. The sample will be drawn from diverse industry sectors to ensure a comprehensive understanding of cross-border collaborations and sustainability practices across different contexts. To perform data analysis, statistical software packages such as SPSS or STATA will be utilized. Also, descriptive statistics will be used to summarize the characteristics of cross-border collaborations, while inferential statistics, including regression analysis, will be employed to examine the relationships between variables and test hypotheses;
- in addition to quantitative analysis, a mixed-methods approach will be adopted to explore the role of sustainability accounting practices in facilitating sustainability alignment and its broader impacts on environmental, social, and economic outcomes. Qualitative data will be collected through semi-structured interviews with key stakeholders, including corporate executives, sustainability practitioners, and industry experts. Furthermore, thematic analysis could be employed to analyze qualitative data, allowing for the identification of recurring patterns, themes, and relationships. The integration of different kinds of findings (qualitative and quantitative) will enable a comprehensive understanding of the dynamics underlying sustainability alignment and its implications for sustainable development.

At present, the research is in the data collection stage, wherein efforts are focused on gathering quantitative and qualitative data from relevant stakeholders and sources. In contemplating the future evolution of this methodology, it's essential to consider the increasing role of artificial intelligence (AI) and autolearning algorithms in data analysis and interpretation. In fact, these advanced computational tools offer exciting opportunities for refining both the quantitative analysis and mixed-methods components of our research approach. Incorporating machine learning algorithms like Random Forest and Gradient Boosting Machines into quantitative analysis can enhance traditional statistical methods, revealing intricate patterns and relationships within extensive datasets. For instance, employing Support Vector Machines could elucidate predictive factors influencing sustainability outcomes, while Recurrent Neural Networks might reveal temporal trends in collaborations effectiveness. Furthermore, these advanced algorithms enable more precise forecasting of future sustainability trends, empowering decision-makers to strategize effectively for long-term sustainability objectives.

However, it's crucial to acknowledge the limitations of AI and autolearning algorithms in the context of our research. These technologies rely heavily on the quality and representativeness of the underlying data, which may vary significantly between countries due to differences in regulatory frameworks, cultural norms, and reporting standards (Io Conte et al., 2023). As a result, AI-driven analyses may encounter challenges in accurately capturing and comparing sustainability alignment efforts across diverse contexts, potentially leading to biased or misleading conclusions. Additionally, the interpretability of AI-generated insights poses a challenge, as complex algorithms may produce results that are difficult to explain or validate within the context of sustainability reporting. Sustainable reporting practices, in fact, may be influenced by cultural attitudes towards environmental stewardship, social responsibility, and corporate governance, making it challenging to generalize findings across different countries or regions.

Results. As stated before, our ongoing research endeavors to explore dynamics, challenges and limits inherent in achieving sustainability alignment within cross-border business collaborations. Specifically, our focus lies in examining the interplay between supply chain interactions and merger and acquisition (M&A) activities in fostering the already mentioned alignment. Based on existing literature on the theme, and considering the ongoing nature of our work, we can here outline possible and expected results. In particular, the combination of quantitative analysis and qualitative exploration could uncover several key findings:

- our research could unveil a robust correlation between cross-border collaborations and sustainability alignment among large firms, spanning developed and underdeveloped regions. Through quantitative analysis, we could identify concrete mechanisms by which these collaborations foster sustainability initiatives. For instance, we could find that cross-border partnerships facilitate knowledge transfer, enabling firms in underdeveloped regions to adopt best practices from their counterparts in developed nations. Additionally, we could observe capacity-building initiatives and increased access to resources and expertise, empowering firms to enhance their sustainability practices. These potential findings would underscore the critical role of international partnerships in advancing sustainability goals and improving corporate governance practices on a global scale. Regarding supply-chain dynamics, our research may reveal distinct patterns in these interactions between developed and underdeveloped countries. Quantitative analysis could also identify key drivers and determinants of supply chain integration, such as resource availability, technological capabilities, and market demand. Additionally, qualitative insights may provide a deeper understanding of the challenges and opportunities associated with cross-border collaborations. Regarding M&A operations, quantitative analysis could quantify the frequency and magnitude of M&A transactions within and between regions, while qualitative insights may shed light on the motivations and strategies driving these transactions;
- our research also aims to uncover the significant impact of sustainability accounting practices on sustainability alignment. Through a mixed-methods approach, we could quantitatively demonstrate the contributions of these

practices to enhanced environmental, social, and economic outcomes. For instance, we could find that firms implementing robust sustainability reporting frameworks experience reduced environmental footprints, improved social welfare for employees and communities, and enhanced economic resilience. Qualitative insights could also provide understandings of the challenges and opportunities associated with the adoption of sustainability reporting practices across different regions, shedding light on strategies for overcoming barriers and maximizing benefits;

- we anticipate identifying notable variations in sustainability reporting practices across different countries, shaped by regulatory frameworks, cultural norms, and reporting standards. For example, while large enterprises in developed economies could prioritize sustainability reporting to meet stringent regulatory requirements and stakeholder expectations, firms in underdeveloped regions could face challenges such as limited resources and institutional barriers. Nonetheless, we could find that various incentives, such as access to international markets and foreign investment, motivate firms in underdeveloped countries to align their reporting practices with global standards. These potential findings would highlight the dynamic interplay between regulatory contexts, market dynamics, and corporate behavior in shaping sustainability reporting practices on a global scale;
- at last, we aim to develop a comprehensive model to understand the relationships between supply chains, M&A activities, and sustainability alignment across different country contexts. This model could incorporate quantitative variables such as supply chain integration indices, M&A deal volumes, and sustainability performance metrics, as well as qualitative factors such as regulatory environments, cultural norms, and institutional frameworks. By elucidating the interplay between these variables, our model could provide valuable insights for policymakers and practitioners, seeking to promote sustainable development through different kind of firms and economies collaboration.

Research limitations. Our research, embedded within a partnership between universities in Italy and the UK, holds promise in offering valuable insights to the academic discourse. Nevertheless, it's crucial to acknowledge several limitations inherent in our study. Firstly, our reliance on self-reported data from surveys and interviews may introduce biases, such as social desirability effects, potentially leading to inflated estimates of sustainability adherence. Additionally, the sample size and composition of our study may not fully capture the diversity of firms and stakeholders engaged in cross-border collaborations, thus limiting the generalizability of our findings. Secondly, the intricate nature of such collaborations and sustainability initiatives poses challenges in isolating causal relationships and identifying contextual factors such as cultural disparities and regulatory environments. Moreover, the evolving landscape of sustainability standards and regulations may impact the relevance of our findings over time (Taylor et al., 2018). To address these limitations, it is imperative to conduct a comprehensive study to delineate the characteristics and classifications of developed and underdeveloped countries. This will involve leveraging not only existing literature but also reports from international organizations. Additionally, obtaining open-access information about supply chains and M&A activities in specific sectors is essential. At last, it is essential to refine the definition of specific types of firms or characteristics and to enhance our methodologies. This includes ongoing efforts to gather data and refine our analytical approaches to ensure robustness and accuracy in our findings; it's worth noting that our methodologies are continuously evolving and will soon undergo enhancements to ensure greater precision and reliability. It is also important to highlight our intention to provide a clearer definition of the term "collaboration". While this term has been utilized in existing literature about sustainable transition and alignment, we aim to refine its boundaries and parameters for better clarity and precision.

Managerial implications. This ongoing research carries significant implications for managers and decision-makers involved in cross-border business collaborations and sustainability initiatives. Firstly, expected results could underscore the importance of fostering strategic partnerships and knowledge-sharing networks across geographical boundaries. Managers, in fact, can leverage cross-border collaborations to enhance sustainability alignment by facilitating knowledge transfer, capacity building, and resource sharing among partner firms. For example, establishing mentorship programs or collaborative workshops can facilitate the exchange of best practices and innovative solutions for addressing sustainability challenges. Secondly, our research highlights the pivotal role of sustainability accounting practices in driving positive outcomes for both firms and society at large. Managers in underdeveloped countries are then encouraged to prioritize the adoption of robust sustainability reporting frameworks and transparent accounting practices to enhance their credibility, accountability, and stakeholder trust. Identifying incentives and leveraging international partnerships, they can overcome challenges and align their reporting practices with global standards.

Originality of the paper. Our work contributes to the existing literature on sustainability alignment within cross-border collaborations by offering novel insights into the interplay between supply chain interactions, merger and acquisition (M&A) activities, and sustainability accounting practices. While previous studies have examined these topics individually, our paper integrates these diverse strands of research to provide a comprehensive understanding of the mechanisms driving sustainability initiatives in a global context. Our study extends beyond traditional quantitative analyses by incorporating qualitative insights and mixed-methods approaches to uncover the different dynamics of sustainability alignment. Additionally, our study addresses the gap in the literature regarding variations in sustainability reporting practices across different countries and regions, offering valuable insights into the contextual factors shaping corporate sustainability practices in different economies. Overall, the originality of our paper lies in its interdisciplinary approach, novel conceptual framework, and comprehensive analysis of the interrelationships in cross-border partnerships.

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Sustainable and innovative practices in foodstuffs domain: the impact on consumer's perceptions and dispositions

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Abstract

The goal of this study is to examine how the implementation of sustainable practices (such as organic production) and innovative technologies (like blockchain) in agri-food products can influence consumers' perceptions of product authenticity. This may elevate their willingness to pay a premium for products embodying these characteristics, owing to the perceived utility of blockchain technology. Results from 606 Italian participants suggested that a greater perceived product authenticity positively impacts consumer willingness to pay a premium price for an organic product through a utility's perception of blockchain technology-based mechanism. More importantly, the results suggest that this effect is stronger in the case of utilitarian (vs. hedonistic) foodstuffs.

Keywords: *Product authenticity; Willingness to pay; Blockchain technology; Organic production; Olive oil; Wine.*

Framing of the research. *The rise in eco-consciousness among consumers, spurred by growing pollution concerns (Konuk, 2019; Teoh and Gaur, 2019), has compelled businesses to pivot towards sustainable practices and products, such as organic food. This shift isn't just a response to environmental pressures but also a strategic orientation to stay competitive globally and cater to evolving consumer preferences. Today's consumers aren't just mindful of the environment but also socially aware, understanding the broader impacts of their choices (Joshi and Rahman, 2016). This awareness drives them towards sustainable purchasing, as they recognize the drawbacks of non-eco-friendly options (Dagher and Itani, 2014). Consequently, there has been a surge in demand for organic food (Eyinade et al., 2021), valued for its perceived health benefits, environmental friendliness, and ethical treatment of animals (Dangi et al., 2020; Janssen, 2018). Moreover, consumers are drawn to its sustainable, authentic, and natural attributes (Mazzacano D'Amato and Falzon, 2015), often seeking not just health benefits but also pleasure and satisfaction (Brantsæter et al., 2017).*

From this perspective, the agri-food sector has undergone significant changes in recent years, driven by a growing awareness of the environmental and social impacts of food production (Sala et al., 2017). As a result, many companies are moving towards more sustainable practices, such as organic production, in order to meet the increasingly eco-friendly consumer needs. In parallel, the integration of blockchain technology in the agri-food industry is emerging as a powerful solution to ensure product traceability and authenticity throughout the entire supply chain (Marozzo et al., 2022). This technology offers the possibility to safely and transparently record all stages of production and distribution, thus ensuring the genuineness and origin of the products (Menon and Jain, 2021).

In the Italian context, olive oil and wine are among the main products embracing these changes. For example, organic olive growing ranks as the third largest crop in Italy, covering 242,708 hectares in 2019, which accounts for 12% of all Italian organic SAU¹ - equal to 1,993,263 hectares. From 2010 to 2019, the organic cultivation areas dedicated to olive oil have doubled. According to a recent report of the Central Inspectorate for Quality Protection and Fraud Prevention of Agri-Food Products (ICQRF, 2024), the stocks of organic oil compared to 2023 show a slight increase of +7.6%. The extra virgin olive oil from organic farming counts (as of 29 February 2024) 41,775 tons in stock. The regions storing the largest quantities are Puglia (41.8%), Tuscany (13.1%), Sicily (13.1%), and Calabria (11.2%). Regarding wine, Del Bello (2021) noted that the organic wine vineyard in Italy exceeds 125 thousand hectares, with 81% having completed the conversion period and 19% certified as in conversion. In 2021, the consumer market value for organic wine products

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¹ The "Superficie Agricola Utilizzata" (SAU) represents the area of agricultural holdings occupied by arable land, kitchen gardens, arboreturns and permanent crops, meadows and pastures.

increased by 6.5% compared to 2020, reaching 45.2 million euros at the end of 2021. This confirms the increasing trend observed in the last quinquennium, with a cumulative growth of +254.2% (Del Bello, 2021).

Innovative practices have also been adopted. For example, in 2023, FederItaly² launched the “FederItaly 100% Made in Italy” collective brand, which, through an innovative validation system, promotes and supports 100% Italian products³. This mark of origin is distinguished from the simple “Made in Italy” by requiring extensive documentary and on-site checks, including, a company audit to check that the entire production process complies with the relevant rules and the product specification. The innovation lies in the verification process and brand authenticity, using a blockchain technology platform to store all the information related to the product and the company, as well as the main stages of the certification process. This makes the counterfeiting of the product impossible, as blockchain technology enables the verification of the mark’s validity by scanning a QRcode linked to this innovative platform, ensuring the purchaser of the product’s authenticity. This innovation has also reached the olive growing sector, where several companies and consortia have adopted blockchain technology to certify extra virgin olive oil. For the first time, blockchain technology has been used to certify the extra virgin olive oil’s 100% Made in Italy origin, genuineness, and authenticity. In the same direction, the wine sector has recently introduced blockchain technology to ensure transparency and traceability, promote sustainability, and enhance the Made in Italy brand and culture (e.g., Wine Blockchain EY). Therefore, both the olive and wine sectors seem to be ideal contexts for exploring and investigating consumer behavior towards these growing trends.

Purpose of the paper. This research aims to demonstrate how new sustainable (e.g., organic production) and innovative (e.g., blockchain technology) practices applied to agri-food products can influence the consumers’ perception of product authenticity and, consequently, increase their willingness to pay a premium price for the purchase of products with these features, thanks to the perceived level of utility towards blockchain technology.

According to Wertenbroch and Skiera (2002), the willingness to pay a premium price relates to the maximum price a consumer will spontaneously pay for a product or service. Homburg et al. (2005) describe it as an indication of the value that an individual assigns to the consumption experience in monetary units. A product justifies a premium price when consumers are willing to pay more for it than for a similar competitive product (Shimp et al., 1993). Several studies suggest that consumers’ willingness to pay a premium price to purchase food products may be linked to perceived product attributes and values, such as food safety (e.g., Angulo et al., 2005), tastiness (e.g., Krystallis and Chrystohoidis, 2005), healthfulness (e.g., Hartmann et al., 2018), and authenticity (Marozzo et al., 2022). According to Gutman (1982), consumers buy products that can lead to desired consequences, such as product value perceptions. Thus, the willingness to pay a premium price generally reflects perceived product values and attributes and is likely driven by perceived product authenticity. Building on the signaling theory (Spence, 1974), which addresses market information asymmetry (Connelly et al., 2011), this study argues that information asymmetry leads to customer uncertainty about the quality of a product. Previous research suggests the use of proper signals, that is “an action that the seller can take to convey information credibly about unobservable product quality to the buyer” (Rao et al., 1999, p. 259), to reduce customer’s uncertainty. Therefore, grounded in signaling theory, this study identifies appropriate signals (i.e., organic production and the application of blockchain technology) that enhance the perceived product authenticity. More importantly, as the signaling theory emphasizes the credibility of signals, suggesting that effective signals work only to the extent that customers perceive them as credible (Boulding and Kirmani, 1993), we build on the trust-transfer theory (Doney and Cannon, 1997) and maintain that the credibility of authenticity signals is linked to the consumer utility’s perception of blockchain technology. Thus, it is postulated that:

H₁: The perceived utility of blockchain technology mediates the effect of perceived product authenticity on consumers’ willingness to pay a premium price for organic products.

Furthermore, we proposed that the type of product moderates the relationship between the perceived product authenticity and consumers’ willingness to pay a premium price for organic products, via the perceived utility of blockchain technology mechanism, by distinguishing between utilitarian vs. hedonistic food. According to previous studies (e.g., Maehle et al., 2015; Nardi et al., 2020), foodstuffs with a utilitarian character prioritize nutrition as their primary characteristic (e.g., milk, rice, and olive oil); while hedonic foodstuffs emphasize emotional aspects (like flavor satisfaction) as their main attribute (e.g., sweets and salty processed food, and wine). As shown by previous research (e.g., Madzharov, et al., 2016) when choosing hedonic foodstuffs, consumers decrease their self-control over nutritional aspects. Therefore, building upon the risk perception theory (Slovic, 1987) which refers to a person’s view of the inherent risk in a situation, and the perceptions of food safety risk (Tonsor et al., 2009) reflecting an individual’s belief about the level of health risk, we assert that, in the context of utilitarian products (like olive oil - where nutritional aspects are relevant) product authenticity can be perceived as a key indicator of quality and safety. This is because, for utilitarian products that are often used as part of a daily routine or that have health implications, the guarantee of authenticity and quality can mitigate the risk perceived by the consumer. As a result, we expect that the consumers’ willingness to pay a premium price for a utilitarian foodstuff (i.e., olive oil) is greater than for a hedonic (i.e., wine) foodstuff. Formally:

H₂: The product type moderates the effect of product authenticity on consumers’ willingness to pay a premium price, via the perceived utility of blockchain technology mechanism. Specifically, the positive effect of product authenticity on consumers’ willingness to pay a premium price is greater in the case of utilitarian (i.e., olive oil) rather than in the case of hedonistic (i.e., wine) products.

² Federation Employer created to protect and promote the Made in Italy.

³ In compliance with Law 166/09, article 16.

Methodology. To test the above-mentioned hypotheses, we performed a quantitative analysis, by collecting data from a sample of 606 Italian participants (57,3% female, with ages ranging from 18 to over 65, with the most represented age group being 25-34 years). The online survey was built on the Qualtrics software platform. It was advertised through a convenience sample (Taherdoost, 2016), a kind of nonrandom sampling, where participants are chosen based on certain practical criteria, such as geographical proximity, availability at a certain time, easy accessibility, or the willingness to volunteer (Dörnyei, 2007). We constructed a structured questionnaire using the measurement scales adapted from prior studies, which have been validated for reliability. All items were rated using a 7-point Likert scale. In particular, the concept of product authenticity was measured using an 8-item scale (e.g., Marozzo et al., 2021), while the concept of willingness to pay a premium price was measured using a 3-item scale adapted from Ghali (2020). Finally, the concept of consumer utility's perception of blockchain technology was captured using a 5-item scale (see Appendix – Table A.1). To account for the proposed moderator variable (i.e., product type: utilitarian vs. hedonistic), we created two versions of the questionnaire, one for the utilitarian product (i.e., organic olive oil), and the other for the hedonistic product (i.e., organic wine), with participants randomly assigned to one of the two conditions of the between-subjects design⁴.

Harman's single-factor test, reliability of each scale through Cronbach's α coefficient, descriptive analysis, Pearson's correlation analysis, and Hayes' PROCESS Macro Model 4 and Model 5 were used to analyze the gathered data. All completed questionnaires were analyzed using IBM SPSS Statistics (version 25, SPSS Inc., Chicago, IL, USA) and the PROCESS macro3.5 (Hayes, 2017). The demographic profiling of the participants was reported by descriptive statistics. Harman's single-factor test was used to examine the common method bias derived from self-reported data (Podsakoff et al., 2003). The Cronbach's α coefficient was used to evaluate the scale's reliability (Nunnally, 1978). Pearson correlation analysis was used to investigate the association between consumers' perceived product authenticity, utility's perception of blockchain technology, and willingness to pay a premium price for an organic product. The mediating role of the utility's perception of blockchain technology was examined using PROCESS Model 4. The moderating effect of the product category (utilitarian vs. hedonistic) was analyzed using PROCESS Model 5 (Hayes, 2017). In addition, we used the 5000 resample bootstrapping method with a 95% CI to test the effect of the independent variables on the dependent variable through the mediating variable. All p values were two-sided, with $p < 0.05$ indicating a statistically significant result. The report of this study strictly adheres to the STROBE Statement (von Elm et al., 2007).

Results. As the first step, Harman's single-factor test extracted 16 factors with eigenvalues greater than 1. The first factor explained 42.02% of the total variance, which falls below the recommended threshold of 50% (Kock, 2020), suggesting that common method bias is unlikely to significantly impact the results of our analysis. Then, all the used scales were evaluated for reliability. Specifically, the concept of product authenticity showed a Cronbach alpha (α) of .91 and all corrected Item-Total Correlations were $>.65$; willingness to pay a premium price showed an $\alpha = .90$ and all corrected Item-Total Correlation $>.79$; finally, the concept of utility's perception of blockchain technology showed an $\alpha = .94$ and all corrected Item-Total Correlations $>.76$. Consistent with common practices in the literature (e.g., Diamantopoulos et al., 2012), for each of the above-mentioned constructs (i.e., product authenticity, willingness to pay a premium price, and utility's perception of blockchain technology) we sought to derive a unidimensional value for each scale, thus, an average score was computed. Descriptive statistics and Pearson correlation analysis on the average score of the constructs were performed to test the relationships among measured variables. As shown in Table 1, Pearson correlation analysis demonstrated that product authenticity was positively correlated with utility's perception of blockchain technology ($r = .418, p < .01$) and willingness to pay a premium price ($r = .521, p < .01$). Likewise, willingness to pay a premium price was found to have significant positive relationships with utility's perception of blockchain technology ($r = .315, p < .01$).

Table 1. Means, standard deviations, and Pearson correlations of each variable (N=606)

Variable	M	SD	Product authenticity	Utility's perception of blockchain technology	Willingness to pay a premium price
Product authenticity	5.12	1.27	-		
Utility's perception of blockchain technology	5.19	1.39	.418*	-	
Willingness to pay a premium price	5.07	1.52	.521*	.315*	-

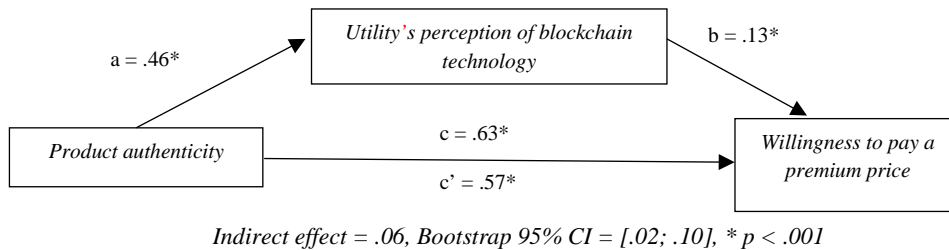
* $p < .01$

Then, a mediation analysis (PROCESS macro - model 4, Hayes, 2017) was conducted to test the underlying mechanism outlined in H_1 (product authenticity \rightarrow utility's perception of blockchain technology \rightarrow willingness to pay a premium price). The analysis yielded a significant total effect of product authenticity on willingness to pay a premium price ($c = .63; p < .001$); a significant effect of product authenticity on utility's perception of blockchain technology ($a = .46, p < .001$); a significant effect of utility's perception of blockchain technology on willingness to pay a premium

⁴ Considering the aim of this research, that is whether new sustainable (e.g., organic production) and innovative (e.g., blockchain technology) practices applied to agri-food products can impact the perception of product authenticity e, in turn, increase the willingness to pay a premium price for the purchase of products with these features, in the introductory part of the questionnaire was shown a picture of the product (containing both the reference to organic production - i.e., organic EU certification, both the reference to blockchain technology - i.e., QRcode) accompanied by a brief description of both organic production and blockchain technology.

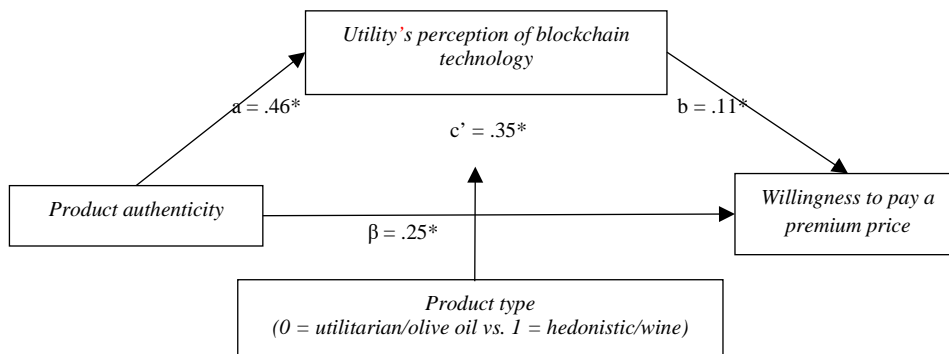
price ($b = .13, p < .001$); and a significant direct effect of product authenticity on willingness to pay a premium price ($c' = .57, p < .001$) when controlling for utility's perception of blockchain technology. The indirect effect was quantified as .06, with a 95% bias-corrected bootstrap confidence interval based on 5,000 resamples of [.02; .10], thus supporting the prediction that the utility's perception of blockchain technology mediates the effect of product authenticity on willingness to pay a premium price. Figure 1 illustrates the results of the mediation analysis. Overall, the results provide support for the effect of product authenticity perception on consumers' willingness to pay a premium price for an organic product through a utility's blockchain technology-based mechanism.

Figure 1. The mediating effect of utility's perception of blockchain technology on the relationship between product authenticity and willingness to pay a premium price.



To further explore and test our H_2 , which posits that the relationship between perceived product authenticity and consumer's willingness to pay a premium price via utility's perception of blockchain technology is moderated by product type (utilitarian vs. hedonistic), we conducted a moderated mediation analysis (PROCESS macro - model 5, Hayes, 2017). Specifically, product authenticity was treated as the independent variable, the type of product (0 = utilitarian – olive oil vs. 1 = hedonistic – wine) as the moderator, whereas consumers' willingness to pay a premium price and the utility's perception of blockchain technology as the dependent and the proposed mediator variable, respectively. Results of the conditional mediation showed that the direct effects model predicting consumers' willingness to pay a premium price accounted for 34% of the variance ($R^2 = .34; F(4, 601) = 76.88; p < .001$). In particular, the results showed that product authenticity positively influenced the utility's perception of blockchain technology ($a = .46, p < .001$), which in turn was positively related to consumers' willingness to pay a premium price ($b = .11, p < .001$). Even when considering the utility's perception of blockchain technology, product authenticity still significantly influenced consumers' willingness to pay a premium price ($c' = .35, p < .001$). More importantly, the results also revealed a significant interaction (i.e., product authenticity X product type; $\beta = .25, p < .001$) in the direct "c" path between product authenticity and consumers' willingness to pay a premium price. Specifically, the relationship between perceived product authenticity and consumers' willingness to pay a premium price was stronger in the case of the utilitarian (i.e., organic olive oil) product versus the hedonistic (i.e., organic wine) product ($b_{utilitarian} = .60, t = 10.35, p < .001$ vs. $b_{hedonistic} = .34, t = 5.31, p < .001$). These results supported our H_2 . The indirect effect of perceived product authenticity on consumers' willingness to pay a premium price via utility's perception of blockchain technology turned out to be statistically significant ($\beta = .05$; boot standard error [SE] = .02; 95% [CI] = [.01; .09]). The model results are detailed in Figure 2.

Figure 2. The moderating effect analysis



Conditional direct relationship

Product authenticity → Willingness to pay a premium price

In case of utilitarian product (olive oil): $\beta = .60, t = 10.35, p < .001$

In case of hedonistic product (wine): $\beta = .34, t = 5.31, p < .001$

Indirect relationship

Product authenticity → Utility's perception of blockchain technology → Willingness to pay a premium price

$\beta = .05, SE = .02, Bootstrap\ 95\% \text{ CI} = [.01; .09], p < .001$

Overall, our results provide support for the effect of perceived product authenticity on consumer willingness to pay a premium price for an organic product through a utility's perception of blockchain technology-based mechanism. More importantly, the results suggest that the effect is greater in the case of utilitarian (vs. hedonistic) foodstuffs.

Research limitations. Future research endeavors have the potential to address the limitations identified in this study. Firstly, given the current study's exclusive focus on Italian participants, broadening the participant pool to encompass individuals from diverse cultural backgrounds could significantly enhance the generalizability of findings. Future research might, therefore, extend the sample by including participants from different countries with diverse characteristics and behaviors towards new sustainable (e.g., organic production) and innovative (e.g., blockchain technology) practices. Secondly, to establish causality, future investigations could benefit from longitudinal, and cross-cultural studies that move beyond the confines of the present research. Third, future studies could investigate other sectors and expand on how blockchain could potentially transform consumer trust dynamics across different industries. Finally, as the research solely relied on self-reported data, there is a potential for the findings to be influenced by participants' subjective perceptions. Thus, addressing this limitation might involve incorporating more data sources to validate self-reported information.

Managerial implications. This research offers several managerial implications for companies operating in the organic food industry that are considering the implementation of blockchain technology. As utility's perception of blockchain technology is increasingly recognized as a mechanism to ensure the authenticity of products, companies should closely monitor market trends and quickly adapt their branding and marketing strategies to capitalize on consumers' orientation in the transparency and authenticity principles. It is recommended that companies prioritize the implementation of blockchain-based systems to track and validate the production path of their organic products. This can increase consumers' perceptions of authenticity among consumers and, thus, their propensity to pay a premium price. Finally, since the effect of the perception of authenticity is greater in utilitarian food than in hedonistic food, companies should adapt their marketing strategy according to the type of food products. For example, for utilitarian foodstuffs, firms should highlight the benefits to the health, provenance, safety, and sustainability of the product, while for hedonistic products they could focus more on sensory experience and luxury.

Originality of the paper. This study develops a model that integrates different concepts from different domains (i.e., organic food products, blockchain, and consumer disposition). By adopting a multidisciplinary approach, this research can lead to a deeper understanding of consumer behavior and attitudes toward utilitarian and hedonistic products. Moreover, to the best of our knowledge, there are no studies that analyze the perception of the utility of blockchain technology in the relationship between product authenticity and consumers' willingness to pay a premium price for an organic product. Understanding how consumers perceive blockchain technology's utility applied to organic food and how this can impact their decisions may be relevant to continue advancing the application of this technology to ensure transparency and authenticity within the agri-food industry.

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Appendix

Table A.1. Measurements items, sources, and reliability of study instrument

Variables	Measurement Items	Source (adapted from)	Cronbach Alpha
<i>Willingness to pay a premium price</i>	I am willing to spend extra in order to buy the organic olive oil/wine	Ghali (2020)	$\alpha = .90$
	It is acceptable to pay a premium price to purchase the organic olive oil/wine		
	With respect to conventional olive oil/wine, I am willing to pay more for organic olive oil/wine		
<i>Product authenticity (The organic olive oil/wine):</i>	Is a genuine product	Marozzo <i>et al.</i> (2021)	$\alpha = .91$
	Is an original product		
	Is a true product (not altered)		
	Is a typical product		
	Is made with the traditional method		
	Is unique in its kind		
	Reflects its place of origin		
Is a typical Italian product			
<i>Utility's perception of blockchain technology</i>	Blockchain technology is reassuring with regard to product traceability	Authors' proposal	$\alpha = .94$
	Blockchain technology reduces the risk of food fraud		
	Blockchain technology increases my confidence in the product		
	Blockchain technology, allowing product traceability, reassures me about the authenticity of the product		
	Blockchain technology, enabling product traceability, reassures me about product sustainability		

Note: All items were measured on a 7-point Likert scale (ranging from 1=Strongly disagree, 7=Strongly agree).

Evolution of Sustainable Reporting: Analysis of Impacts and Prospects of CSRD Regulation

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Abstract

This ongoing study aims to analyze the impact of the Corporate Sustainability Reporting Directive (CSRD) and, consequently, ESRS (European Sustainability Reporting Standard) on the evolution of corporate non-financial reporting in Europe. Following a detailed introduction to the regulatory and corporate context in which the CSRD operates, the research method adopted is multidisciplinary and critical, combining a systematic literature review, an analysis of corporate implementation processes, and an exploration of the impact on the financial market. Preliminary results indicate that the CSRD is significantly influencing the reporting practices of European companies, fostering greater transparency and corporate accountability. However, challenges related to the complexity of the new regulatory provisions and the quality of reporting data also emerge. Research limitations arise due to the recent implementation of the CSRD, necessitating further studies to comprehensively evaluate its long-term impact. The implications of this study pertain to the promotion of corporate sustainability and corporate governance, while innovations and prospects focus on the importance of a dynamic and evolving approach to research on corporate sustainability reporting.

Key words: Corporate Sustainability Reporting Directive; sustainable reporting; sustainability; regulatory framework; environmental impact.

Framing of the research. Sustainability represents a topic of crucial importance that delineates the future of our planet and the destiny of future generations (Goyder, 1961; Heald, 1970; Clark, 2005). It constitutes a broad and interconnected concept embracing responsible management of natural resources, environmental conservation, social equity, and economic prosperity (Carroll, 1999; Cristofori et al., 2007; Barile et al., 2023). Today, the challenge of sustainability demands a redefinition of our lifestyles, production, and consumption models to ensure the planet's capacity to sustain the escalating needs of industrialized societies (Dylick & Hockerts, 2002; Djsi, 2009; Li & Gao, 2022). Over the decades, changes in economic development models have often resulted in devastating environmental impacts, including accelerated climate change, biodiversity loss, pollution, resource scarcity, and social inequalities (Gray, 2006; D'Amore et al., 2015). Consequently, the concept of sustainability emerges as the key to effectively addressing such challenges, necessitating the adoption of sustainable practices in all aspects of life, from food to energy, transportation to construction, and even to investments and public policies (Hopwood et al., 2005). This is not merely an ethical imperative but also an economic one, as sustainable practices can enhance efficiency, reduce costs, and stimulate innovation (Nidumolu et al., 2009; Garvey et al., 2020; Calabrese et al., 2021; lo Conte et al., 2023).

However, transitioning towards a sustainable future requires a long-term vision and the involvement of all sectors of society, including businesses, governmental institutions, and citizens (Bowen, 1953; Clark, 2005; Colbert & Kurucz, 2007; lo Conte & Sancetta, 2024). In this context, technological progress and innovation play a fundamental role in mitigating environmental impacts and improving quality of life, offering significant opportunities for economic growth derived from sustainable solutions (Nidumolu et al., 2009; Csrquest, 2010; Calabrese et al., 2021). Nevertheless, time is essential as the window of opportunity to address sustainability challenges is rapidly narrowing (Desa, 1992; lo Conte et al., 2023). New sustainability regulations, such as the Corporate Sustainability Reporting Directive (CSRD) of the

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European Union, represent a milestone in the journey towards a greener and more responsible future⁶ (Tepic et al., 2023)⁷. These regulations, along with other initiatives such as the Task Force on Climate-related Financial Disclosures (TCFD) in the United Kingdom, compel businesses to consider sustainability issues as integral to corporate decisions, promoting a transition towards a green economy (Tepic et al., 2023). Figure 1 provides a synthesized overview of the key steps involved in this path.

Figure 1: Key Steps in Sustainability Reporting Process and Impacts

Year	Development	Impact
2000	Introduction of the Global Reporting Initiative (GRI) in Europe, providing guidelines for sustainability reporting.	The GRI framework became widely adopted by European companies, setting a standard for sustainability reporting globally. It encouraged transparency and accountability in corporate practices.
2014	European Parliament approves the Non-Financial Reporting Directive (NFRD), requiring large companies to disclose non-financial information.	The NFRD marked a significant step in mandating non-financial disclosure, enhancing transparency, and enabling stakeholders to evaluate companies' environmental and social performance.
2017	European Commission publishes guidelines on non-financial reporting, providing further clarity on NFRD requirements.	The guidelines helped companies understand and implement the NFRD's provisions effectively, promoting consistency and comparability in non-financial reporting across the European Union.
2018	Task Force on Climate-related Financial Disclosures (TCFD) releases recommendations for climate-related financial disclosures, influencing European reporting practices.	The TCFD recommendations prompted European companies to assess and disclose climate-related risks and opportunities more comprehensively, aligning their reporting with emerging global standards.
2020	European Union publishes the Taxonomy Regulation, establishing criteria for environmentally sustainable economic activities.	The Taxonomy Regulation provided a framework for defining sustainable investments, guiding capital flows towards environmentally beneficial activities and fostering green finance initiatives across Europe.
2023	Corporate Sustainability Reporting Directive (CSRD) is adopted, expanding NFRD requirements to cover more companies and enhancing reporting quality.	The CSRD represented a significant advancement in sustainability reporting by broadening its scope to include more companies, strengthening reporting standards, and promoting consistency and comparability in disclosure practices across the EU.

Source: our processing

This article aims to analyze the new sustainability regulations, examining the historical-cultural context and evolution of ESG criteria and reporting over time. Significant attention is placed on key European and global frameworks, from the Non-Financial Reporting Directive (NFRD) to the recent Corporate Sustainability Reporting Directive (CSRD), which came into effect on January, 2023. Through a comparative analysis with previous regulations, and in an exploratory manner, the article seeks to highlight how the CSRD represents a significant step towards measuring corporate performance related to sustainability. Indeed, the historical evolution of ESG (Environmental, Social, and Governance) criteria signifies a significant transformation in how companies and investors perceive sustainability. These criteria, which now play a crucial role in corporate and investment decisions, have a history dating back several decades. The origins of a responsible approach to investment predate the new millennium, with ethical investment prohibitions found as far back as biblical times and social movements such as the Quakers' opposition to war and slavery in the 1600s (Renz et al., 2023). Even the political history of South Africa demonstrated the effectiveness of disinvestment as a tool for social change during apartheid (Rodrigues et al., 2020). The Kyoto Protocol in 1997 marked a turning point in global attention to environmental risks, while the 2000s saw the emergence of the ESG approach for responsible investments (Fasan & Mio, 2017; Schaltegger & Burrit, 2020).

The 2030 Agenda further solidified this commitment, establishing 17 global goals called Sustainable Development Goals (SDGs) to create a more sustainable future, involving states, businesses, and investors in a program of binding rules for the current and future common good (Li & Gao, 2022). For the years to come, a series of priority sectors have also been outlined, aiming to reduce carbon footprint through the EU plan for greenhouse gas emissions reduction by 2030 compared to 1990 levels (Davis et al., 2006). Additionally, initiatives are underway to make transportation more environmentally friendly, enhancing cycling infrastructure and investing in sustainable public transportation. The European Green Deal, supported by funding such as NextGenerationEU, thus aims to achieve the goal of reducing climate impact (Khan et al., 2016; Velte & Stockl, 2020). Research conducted by SAP Insight (2021) highlights the growing recognition among companies of the importance of sustainability not only as an external strategy but also as a means to generate long-term competitiveness and value. According to the study, 75% of the 6,600 managers surveyed in 40 countries and 29 sectors believe there is a strong or moderate positive relationship between sustainability and long-term profitability, with a 17% increase compared to 2021⁸. Furthermore, 71% of respondents see a similar relationship between sustainability and long-term competitiveness, with a 28% increase from the previous year. Companies are then

⁶ The Corporate Sustainability Reporting Directive (CSRD) is a significant regulatory framework introduced by the European Union (EU) in 2023, to enhance sustainability reporting practices among companies operating within its jurisdiction.

⁷ Directive (EU) 2022/2464.

⁸ The research carried out by SAP Insight (2021) underscores the mounting acknowledgment within companies of sustainability's crucial role, not just as an external strategic endeavor but also as a fundamental catalyst for long-term competitiveness and value creation. According to the study, there is a widespread perception of a positive relationship between sustainability efforts and long-term profitability.

increasingly using data to support decision-making processes, especially to achieve zero-emission goals, thanks to the development of new measurement systems (Gond et al., 2020). However, managers believe that more certain and transparent data, with increased frequency, are still needed to ensure the validity of calculations and hypotheses.

Purpose of the paper. The overarching objective of this research is to undertake a comprehensive analysis of regulatory developments within the European sphere pertaining to sustainability and ESG reporting, with a focal point on the Corporate Sustainability Reporting Directive (CSRD) and its ramifications for businesses and stakeholders. Central to this endeavor is the investigation of both the immediate and long-term effects of the CSRD on corporate operations and the financial market, coupled with the identification of emerging challenges and opportunities. The research question guiding this inquiry is articulated as follows:

- “What is the impact of the Corporate Sustainability Reporting Directive (CSRD) on the evolution of corporate non-financial reporting in Europe, and what are the future implications for businesses and stakeholders?”

To address this inquiry, the chosen methodological approach relies on a meticulous scrutiny of literature, regulatory frameworks and pertinent corporate disclosures. This entails evaluating the core objectives and foundational tenets of the CSRD, alongside conducting a granular examination of the reporting mandates and projected timelines for its implementation. Moreover, the study endeavors to scrutinize the strategies employed by European firms in response to the CSRD stipulations, encompassing compliance measures, risk mitigation strategies, and reporting methodologies. This endeavor involves a comprehensive analysis of the hurdles and prospects inherent in the process of aligning with the new regulatory paradigms and integrating sustainability into organizational frameworks. Additionally, an imperative facet of this research is to appraise the prospective future impacts of the CSRD on investor decisions and asset management strategies, as well as on the dynamics of corporate value chains. This entails probing the CSRD's role in fostering heightened corporate transparency and accountability, as well as in guiding sustainable capital allocation and facilitating long-term value generation (Dowd, 2009). Lastly, through a judicious analysis and synthesis of research outcomes, the objective is to derive insightful conclusions pertaining to the CSRD's role in advancing corporate sustainability objectives, both within Europe and on a global scale (Sassen & Rasche, 2021).

It is crucial to underscore that this research represents an ongoing endeavor, continually adapting to new findings and emerging challenges in the field of sustainability reporting. The methodology employed herein serves as a foundation for future research, providing a robust framework for further exploration and inquiry into the evolving landscape of corporate sustainability. As such, this study not only contributes to the current understanding of the implications of the CSRD but also lays the groundwork for future investigations aimed at elucidating the evolving dynamics of sustainability reporting and its impact on businesses and stakeholders.

Methodology. The critical nature of the methodology is underscored by its focus on conducting in-depth analyses of relevant regulatory documents, literature, and corporate reports to identify criticalities, innovations, and emerging trends. A pivotal aspect of this methodology is the systematic and critical review of existing literature, which involves ongoing research and analysis of academic articles, government reports, regulatory documents, and relevant corporate reports. The overarching goal is to comprehensively understand the regulatory, corporate, and academic landscape within which the CSRD operates, pinpointing challenges, opportunities, and criticalities associated with its implementation and its impact on corporate reporting practices. Moreover, the methodology encompasses the analysis of the CSRD's implementation processes by European companies, necessitating the examination of compliance strategies, risk management approaches, and corporate reporting practices. Additionally, the research methodology includes a thorough examination of the CSRD's impact on the financial market and corporate dynamics, requiring the collection and analysis of quantitative data from reliable sources to evaluate its influence on investor decisions, corporate strategies, and the dynamics of corporate value chains.

This comprehensive approach enables a thorough exploration of the multifaceted influence of the CSRD on corporate behavior and its implications for investor perceptions concerning sustainability. Moreover, the methodology entails a holistic examination of the criticalities and challenges inherent in this regulation, encompassing an analysis of potential compliance hurdles, such as the intricacies of newly introduced regulatory provisions, and the requisite allocation of additional resources for organizational adaptation.

Results. Despite the persistent uncertainty stemming from the covid-19 pandemic, other factors such as lack of adequate financing and misaligned strategies hinder investments towards sustainability (lo Conte & Sancetta, 2024). However, over the past year, a significant change has been observed in the attitudes of corporate executives towards sustainability (Chauvey et al., 2015; Barile et al., 2023). Measures of environmental impact, integration of sustainability into business processes, and alignment with business strategies have gradually diminished in importance as obstacles, indicating an improvement in understanding sustainability issues (Edgley et al., 2015; Bosco et al., 2023). Sustainability has become increasingly strategic on the global agenda and among Italian companies, but it is essential for leadership to embrace change and adequately prepare corporate resources to address this transformation, with technology playing a crucial role as a tool for measuring and implementing concrete actions.

In today's global business landscape, key sustainability frameworks, such as the Global Reporting Initiative (GRI), play a fundamental role in shaping corporate strategies and reporting, contributing to guiding the world towards a more sustainable future (GRI, 2008; 2009; Tepic et al., 2023). These tools provide guidelines and standards for measuring, managing, and communicating the environmental, social, and governance impact of companies (Khan et al., 2016).

The GRI, in particular, represents one of the most well-known and widely used frameworks globally. It has established guidelines for sustainable reporting covering a wide range of ESG (Environmental, Social, Governance) issues, offering companies a comprehensive framework to measure and communicate their sustainable impact. Another emerging framework is the International Sustainability Standards Board (ISSB), dedicated to developing global standards for corporate sustainability reporting. This tool aims to improve the consistency, comparability, and reliability of sustainability information, focusing mainly on the financial aspects related to sustainability and providing investors with a clearer view of sustainability-related risks and opportunities in corporate investment decisions (Sassen & Rasche, 2021). A significant aspect is represented by the European Union Taxonomy, a regulatory framework developed to identify sustainable economic activities and guide investments towards common environmental goals. This taxonomy, published in the Official Journal of the European Union in 2020, establishes clear criteria for qualifying an activity as eco-sustainable, promoting investments in sectors contributing to environmental and climate objectives⁹ (Grewal et al., 2020). Non-financial reporting (NFR) standards constitute another important initiative, requiring European Union companies to disclose sustainability information that goes beyond traditional financial aspects. This framework aims to improve transparency and consistency in corporate reporting practices within the EU. By exploring each of these sustainability frameworks in detail, it is possible to better understand their impact and the evolution of corporate regulations towards greater sustainability responsibility and transparency.

That said, one of the outputs of the research consists of comparing the European Sustainability Reporting Standards (ESRS), delineated by CSRD, and the Global Reporting Initiative (GRI). This analysis aims to provide a detailed understanding of the differences, similarities, and practical implications between these two sustainability reporting frameworks. Sustainability information, in fact, has a dual nature, combining quantitative and qualitative aspects to offer a comprehensive and descriptive view of corporate sustainability performance (Khan et al., 2016; Guenster et al., 2023). This type of information is not limited to mere past descriptions but also projects into the future. For example, environmental goals declared by companies must be contextualized in a medium- to long-term perspective, aligned with international agreements such as the Paris Agreement and the European Green Deal. It is imperative to include “science-based” goals as well. Prospective information must be an integral part of transition plans, which are detailed in sustainability reports and include implementation, financing, and investment actions consistent with the goals established by the Paris Agreement and the Green Deal, with particular attention to energy sectors derived from coal, oil, and gas.

As said before, a significant aspect concerns the correlation between ESRS (European Sustainability Reporting Standards) and key international sustainability reporting standards, such as the GRI (Global Reporting Initiative) and the SASB (Sustainability Accounting Standards Board). In particular, the guidelines establish that the GRI standard corresponds to the requirements of the ESRS regarding impact relevance, while the SASB standard corresponds to those for financial materiality (Guenster et al., 2023). This clarity simplifies the transition to ESRS adoption for companies already using these standards. Although both standards cover a wide range of sustainability issues, including environmental, social, and governance aspects, there are some fundamental differences between ESRS and GRI. ESRS follows the principle of “double materiality,” which requires companies to assess both the impact of their activities on the environment and society and the impact of these issues on their financial performance (Grewal et al., 2020). In contrast, the GRI primarily focuses on the materiality of impact, i.e., the effects of corporate activities on the environment and society (Li & Gao, 2022). It should be noted that while ESRS will become mandatory for large companies and listed companies in the EU starting in 2024, GRI standards will remain voluntary. Consequently, companies subject to ESRS will have to comply with stricter legal requirements than those using only GRI standards. However, despite these differences, companies currently adopting GRI standards for their sustainability reporting will be well prepared to adopt ESRS, as many disclosure requirements are similar or complementary (Renz et al., 2023). Additionally, GRI has committed to collaborating with EFRAG to provide technical guidance on how current reporters can use their GRI-based reporting practices and processes to comply with ESRS (Figure 2).

Figure 2: Correlation and Transition Between ESRS, GRI, and SASB Standards

Aspect	Description
Correlation between ESRS, GRI, and SASB	The ESRS (European Sustainability Reporting Standards) align with key international standards like GRI (Global Reporting Initiative) and SASB (Sustainability Accounting Standards Board). The GRI standard corresponds to ESRS requirements on impact relevance, while SASB aligns with financial materiality.
Differences Between ESRS and GRI	ESRS follows the principle of “double materiality,” assessing the impact on both the environment/society and financial performance. GRI focuses primarily on the materiality of impact, namely the effects on the environment/society.
Mandatory vs. Voluntary Adoption	ESRS will be mandatory for large and listed companies in the EU starting in 2024, while GRI standards remain voluntary. Companies under ESRS face stricter legal requirements compared to those using GRI standards.
Preparedness of GRI Users for ESRS Adoption	Companies currently adopting GRI standards are well prepared to transition to ESRS, as many disclosure requirements are similar or complementary. GRI collaborates with EFRAG to provide guidance on aligning GRI-based reporting with ESRS.

Source: our processing

⁹ The taxonomy discussed here, published in the Official Journal of the European Union in 2020, sets forth precise guidelines for identifying eco-sustainable activities. Its aim is to stimulate investments in sectors that support environmental objectives.

Despite the current trend observed in large companies, it is inevitable that the adoption of ESRS will require considerable effort from all companies, especially SMEs (Grewal et al., 2020). Smaller companies will be called upon to expand their organizational structure, involving additional skills both in the boardrooms and in daily operations, to address the new sustainability-related challenges. It will be essential to equip themselves with adequate tools for collecting, analyzing, reporting, and monitoring data required by the rigorous requirements of ESRS (Sassen & Rasche, 2021). This will require a proactive approach to compliance with new regulatory standards, involving the integration, or even the construction, of the organizational infrastructure and data management systems necessary well before the Directive comes into effect. In summary, the future requires companies to prepare in advance and adopt a strategic approach to sustainability to remain competitive and compliant with emerging regulatory requirements.

Research limitations. The limitations of this research encompass the continuously evolving nature of both the regulatory framework and corporate practices concerning sustainability reporting. Given the rapid pace of change in regulations and directives, particularly in response to emerging environmental and social challenges, there is a risk that new developments could occur after the completion of this study, potentially affecting the relevance and applicability of the findings. Another significant limitation is the potential variability in the availability and quality of data from companies, particularly regarding their adherence to sustainability reporting standards like ESRS and GRI (Tepic et al., 2023). Factors such as corporate transparency, reporting practices, and the willingness of companies to disclose relevant information could influence the depth and accuracy of the analyses conducted in this research. Moreover, conducting a comprehensive analysis of sustainability reporting standards and practices requires significant financial and human resources, and resource constraints may limit the scope and depth of the research, potentially leading to gaps in the analysis or the inability to explore certain aspects thoroughly. Despite efforts to maintain objectivity, the researchers' opinions and interpretations may unavoidably influence the presentation of results and conclusions, introducing limitations in the form of potential biases or assumptions. Addressing these limitations is crucial for ensuring the robustness and reliability of the research findings, with strategies such as ongoing monitoring of regulatory developments, careful selection and verification of data sources, securing adequate resources for research endeavors, and employing rigorous methodologies to mitigate bias being essential. Furthermore, transparency regarding the research methodology, data sources, and potential biases is essential for promoting the credibility and trustworthiness of the research findings.

Managerial implications. The managerial implications of this research are significant and pertain to both large enterprises and SMEs. Firstly, companies need to prepare in advance to comply with the new European sustainability reporting standards, considering the commitment and resources required to meet the more rigorous legal requirements introduced by the ESRS. This entails the need to review and potentially restructure current reporting practices and data management systems to ensure compliance and accuracy of the information provided. Moreover, companies must consider the strategic role of sustainability in their business model and corporate reputation. Adoption of ESRS not only ensures regulatory compliance but can also offer market differentiation opportunities, enhance investor and consumer trust, and improve corporate reputation. Consequently, managers need to integrate sustainability into the corporate strategy by incorporating sustainable goals and actions into operational and investment plans. SMEs, in particular, face additional challenges in adapting to ESRS standards, considering their limited resources and the potential complexity of sustainability reporting. However, it is essential for SMEs to commit to implementing sustainable practices and adopting a corporate culture oriented towards social and environmental responsibility. To achieve this, investments in staff training, technology, and data management systems may be necessary to ensure accurate reporting and compliance with required standards. Lastly, managers need to be aware of the financial and reputational implications associated with sustainability. In fact, effective management of sustainability information can influence investor assessment, access to capital, and the perception of the corporate brand (lo Conte & Sancetta, 2024).

Originality of the paper. The originality of this study lies in its focus on the comparative analysis between the European Sustainability Reporting Standards (ESRS) and other international sustainability reporting standards, such as the Global Reporting Initiative (GRI) and the Sustainability Accounting Standards Board (SASB). Specifically, this study distinguishes itself by delving into the relationship between ESRS and GRI standards, highlighting the similarities, differences, and practical implications for companies subject to these regulatory requirements. Additionally, this study contributes to existing literature through an in-depth analysis of managerial implications and practical challenges associated with the adoption of ESRS standards, providing valuable insights for managers and stakeholders involved in sustainability reporting. In the future, longitudinal studies could be conducted to track the evolution of companies' sustainability reporting practices over time in response to changes in regulatory frameworks and market dynamics. This would provide valuable insights into the effectiveness and impact of sustainability reporting standards on corporate behavior and performance. Moreover, broadening the scope of comparative studies beyond established frameworks such as ESRS, GRI, and SASB to encompass emerging standards like the Task Force on Climate-related Financial Disclosures (TCFD) recommendations or the International Integrated Reporting Framework would afford a comprehensive perspective on the evolving landscape of sustainability reporting.

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Greening the culinary scene: environmental management initiatives in restaurant sustainability

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Abstract

This research examines the ways in which environmental issues can foster the development of sustainability patterns in restaurants. The study examines a sample consisting of restaurant employees in the United States and derives valuable insights. The results underscore the substantial contribution of environmental consciousness and cleaner production practices in promoting innovative sustainability processes. In addition, the study points out a noteworthy relationship between sustainability process innovation, product innovation, and environmental sustainability progress in the restaurant industry. These findings outline the central role of environmental sustainability in the restaurant industry by highlighting the intricate links between water and energy use in operational workflows, which have a significant impact on environmental conservation efforts. Consequently, prioritizing energy efficiency emerges as a key strategy for reducing the carbon footprint associated with foodservice operations.

Key words: *sustainability; restaurants; cleaner production; innovation.*

Framing of the research. *In contemporary times, organizations face a multitude of environmental changes and claims. Scholars and practitioners emphasize the central role of sustainable product and process innovation in promoting sustainable development, recognized for its potential in conferring competitive advantage (Kuo et al., 2022). Many companies have adopted sustainable innovation strategies to gain an advantage (Asadi et al., 2020; Veronica et al., 2020; Tu & Wu, 2021). As a result, the integration of cleaner production techniques and environmental management schemes has become indispensable in operations, facilitating sustainable product innovation through resource efficiency and waste reduction (De Medeiros et al., 2022). This trend has stimulated the emergence of new sustainable management practices in various sectors aimed at promoting innovative solutions and continuous improvements in sustainability. More in detail, the restaurant sector has a particular incentive to align its management practices with sustainability principles (Kim & Hall, 2020; Sakshi et al., 2020), given its strategic positioning and wide network of stakeholders, including food suppliers, employees, policy makers, and consumers, thus exerting influence on the whole supply chain. Within the restaurant industry, awareness of its significant environmental and social impacts is growing (Kim & Hall, 2020), particularly regarding food waste during preparation and service (Dhir et al., 2020; Filimonau et al., 2020; Okumus, 2020). Restaurants, a key component of the hospitality sector, are the third largest contributor to global food waste, behind only households and the agricultural sector, including associated food processing industries (Filimonau et al., 2019). What distinguishes restaurant activities from other tourism activities is the amalgamation of production, consumption, and service, which makes it difficult to effectively respond to customer needs or resolve dissatisfaction. In addition, the perishable nature of most foods compounds this complexity. Nonetheless, efficient production and service remain critical for hospitality businesses. Because restaurant offerings are experiential in nature, customers tend to perceive environmentally conscious restaurants as more reliable than their non-sustainable counterparts (Kim & Hall, 2020; Han, 2021). Investments in environmental sustainability can prove critical in mitigating several challenges, including high operational costs, environmental uncertainties, and impacts on internal and external stakeholders (Hu et al., 2023). Moreover, the adoption of sustainability in food service operations not only addresses these challenges, but also improves reputation and customer loyalty. Consumers increasingly prioritize environmentally conscious firms, making sustainability initiatives a valuable asset for competitive differentiation (Kim & Hall, 2020). In this wake, restaurants can build trust with stakeholders and create a positive brand perception, which ultimately leads to customer satisfaction and loyalty. However, the path to sustainability in the restaurant industry is multifaceted and requires*

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comprehensive approaches that include not only environmental concerns, but also social and economic dimensions. Therefore, while environmental management practices play a key role in promoting sustainable restaurant development, their integration with broader sustainability strategies is essential for long-term success in a rapidly changing business environment.

Purpose of the paper. Previous research highlights the potential of sustainable initiatives to differentiate restaurants from competitors. Despite the expanding literature on environmental management and sustainable development in the restaurant industry (Cantele & Cassia, 2020; Madanaguli et al., 2021), empirical evidence remains limited. Thus, there is a pressing need for further empirical studies to fill these research gaps and clarify the role of environmental concerns in promoting sustainable development in the restaurant sector. Accordingly, the primary objective of this study is to examine the impact of environmental management practices on achieving environmentally sustainable development in the restaurant industry. Furthermore, extant literature (Llach et al., 2013; Iraldo et al., 2017; Baah et al., 2021) has primarily focused on exploring the connections between cleaner production strategies, environmental sustainability, and organizational performance, as well as examining the relationship between sustainable product innovation, cleaner production, environmental management, and financial performance. Building upon these foundations, our study expands these models by introducing the constructs of sustainable process innovation, water reduction, and energy reduction. This expansion is crucial in the context of environmentally sustainable development within the restaurant sector, where the adoption of advanced technological equipment aimed at mitigating ecological impacts is pivotal (Elkhwesky, 2022). Additionally, acknowledging the interdependence of water and energy consumption in restaurant operational processes is essential (Da Rosa et al., 2021). Efforts to reduce water usage significantly contribute to environmental conservation, with practices such as employing water-saving appliances and minimizing water waste in kitchen processes helping conserve resources and reduce the ecological impact of water extraction and treatment. Similarly, prioritizing energy reduction is paramount for minimizing the carbon footprint of restaurant operations, involving measures such as adopting energy-efficient appliances, optimizing heating, ventilation, and air conditioning systems, and integrating renewable energy sources. By synergizing water and energy reduction strategies, a more comprehensive and holistic approach to environmental sustainability literature is achieved, particularly concerning the restaurant sector. Moreover, this study underscores that environmentally conscious management practices, including waste reduction, energy efficiency, and sustainable sourcing, enhance resource efficiency, consequently contributing to the overall environmental sustainability of restaurants. These theoretical insights advance academic discourse on the relationship between environmental management and environmentally sustainable development within the restaurant industry, offering a nuanced and comprehensive understanding of underlying mechanisms and influencing factors.

Methodology. The study focuses on examining the restaurant industry's engagement with environmental sustainability. Utilizing a self-selection sampling technique (Keiding & Louis, 2018), data were gathered from Amazon MTurk, targeting restaurant employees in the United States. The constructs concerning environmental management, cleaner production, sustainable product innovation, and sustainable process innovation were adapted from previous studies (Severo et al., 2017). Additionally, items pertaining to water and energy reduction were drawn from Teng et al. (2012), while those related to sustainable environmental development were adapted from Severo et al. (2015). Responses were measured on a scale ranging from 1 (strongly disagree) to 7 (strongly agree). A pilot test involving 50 respondents was conducted to ensure the clarity and validity of the scales (Holden, 2010). Minor adjustments were made based on feedback received during the pilot study, with respondents from this phase not included in the subsequent analysis. To analyze data, partial least squares structural equation modeling (PLS-SEM) was employed, following established guidelines (Ali et al., 2018; Usakli & Kucukergin, 2018). Two systematic procedures were undertaken: the measurement model and the structural model. Smart-PLS 4.0 software was utilized to assess both models. In the measurement model stage, construct validity and discriminant validity were evaluated. Additionally, the Fornell-Larcker criteria (Fornell & Larcker, 1981) and the heterotrait-monotrait (HTMT) method were employed to examine discriminant validity (Henseler et al., 2015). The results indicate a lack of discriminant validity.

Results. The expected results should highlight that restaurants prioritizing environmental concerns and implementing cleaner production practices exhibit notable advancements in sustainability process and product innovation. This should be in line with previous findings (Martin-Rios et al., 2018; Cantele & Cassia, 2020; Principato et al., 2021), indicating that such initiatives foster optimization of resource utilization, waste reduction, energy efficiency, and sustainable development of processes and products. Consequently, these practices contribute significantly to enhancing the long-term viability and reputation of restaurants as environmentally friendly establishments (Kasim & Ismail, 2012; Kim & Hall, 2020). Furthermore, the study should point out that restaurants emphasizing sustainable product innovation and engaging in responsible, pro-environmental product design play a crucial role in reducing resource consumption and promoting environmental sustainability within the restaurant sector (Madanaguli et al., 2021; Han, 2021). Notably, these results pertain to the supply side, focusing on the practices adopted by the examined restaurants rather than consumer demand. This underscores the growing awareness, perception, and inclination towards implementing sustainable policies in restaurant management. While it remains uncertain whether these initiatives are driven solely by firms or influenced by consumer demand, our findings should underscore the importance of such policies and practices for restaurants in the sample.

Research limitations. This study contributes to the existing body of literature on environmental management within the restaurant industry through several avenues. However, it has several limitations that deserve consideration. One notable limitation is the exclusive reliance on participant data collection, which limits the ability to compare the results with other datasets. To avoid this limitation, future research should explore the replication of the survey in other domains.

This approach would facilitate the establishment of additional decision-making parameters for selecting sustainability practices that are potentially beneficial for financial success. In addition, there is an opportunity to explore a new research avenue focused on eco-design and eco-innovation to assess their impact on sustainable product innovation. By delving into these factors, researchers can understand their influence on promoting environmentally sustainable practices. In addition, our results suggest the potential application of the Resource-Based View (RBV) to examine the resources and strategic capabilities that enable restaurants to effectively implement environmental management practices. Understanding the role of these resources in contributing to sustainable development could enrich the theoretical foundation of this study. Moreover, further exploration of institutional theory could offer valuable insights into how external pressures, rules, and regulations shape the adoption and effectiveness of environmental management practices in the restaurant industry. This theoretical lens may provide a deeper understanding of the institutional context that influences sustainable development efforts. Finally, it is important to note that this research primarily adopts a supply-side perspective. Therefore, our future efforts aim to conduct a demand analysis in the later stages of the research. This will look at whether consumers expect and perceive such sustainability policies as crucial factors in their decision making. This consumer-centered analysis will shed light on the broader impact and implications of environmental sustainability practices in the restaurant industry.

Managerial implications. *Increasing environmental awareness among consumers and the implementation of global regulations in favor of environmental conservation have forced both businesses and government bodies to invest in sustainable practices. In line with this paradigm shift, our findings offer several implications for managerial strategies to promote and implement environmentally sustainable development. First, it is critical that managers actively engage employees in initiatives to develop innovative practices that improve productivity while promoting environmental ethics. This involves implementing environmentally friendly processes and products within organizational structures. To this end, organizations should encourage employee involvement in creative processes, enabling them to explore and propose environmentally sustainable solutions. Fostering a culture of innovation and sustainability requires a holistic approach that encompasses various dimensions of organizational functioning. This includes enhancing cross-functional collaboration, promoting knowledge sharing, and investing in employee training and development programs focused on sustainability. By nurturing a culture that values innovation and sustainability, organizations can harness the collective intelligence and creativity of their workforce to drive meaningful change. Building on the concept of creativity as a driver of inventive solutions (Begum et al., 2022), active engagement in creative processes enables employees to identify applicable procedures, gather relevant information, and use this data to devise innovative applications and techniques that foster sustainable process and product innovation. In addition, policymakers and government agencies are increasingly focusing on initiatives revolving around green leadership and the promotion of process and product innovations to promote environmental sustainability. It is imperative that governments and organizations collectively pursue the Sustainable Development Goals (SDGs) by supporting the use of environmentally friendly products and processes. In addition, our work offers valuable insights and suggestions to policymakers regarding the facilitation of sustainable innovation processes within companies, emphasizing the importance of an integrated approach encompassing several strategic actions. This integrated perspective is essential for steering sustainable innovation efforts in the right direction, aligning with broader environmental sustainability goals.*

Originality of the paper. *This paper stands out for its originality in several key aspects, setting it apart from existing literature and contributing novel insights to the field of environmental sustainability within the restaurant industry. Firstly, the focus of the research on the integration of environmental management practices, cleaner production techniques, and sustainable innovation processes within the context of restaurants is original. While prior research has explored various facets of sustainability in the hospitality sector, including food waste reduction and energy efficiency, this study takes a holistic approach by examining the synergistic effects of multiple sustainability strategies on overall environmental performance. By including constructs, such as sustainable process innovation, water reduction, and energy reduction, the paper expands the theoretical framework and offers a comprehensive understanding of how restaurants can achieve environmental sustainability through multifaceted approaches. Moreover, the methodology employed in this study contributes to its originality. By utilizing a self-selection sampling technique and gathering data from restaurant employees in the United States, the paper captures insights from a diverse range of perspectives within the industry. This approach allows for a nuanced analysis of the factors influencing environmental sustainability in restaurants, including organizational culture, employee engagement, and managerial practices. Additionally, the use of robust statistical analyses, such as partial least squares structural equation modeling (PLS-SEM), enhances the reliability and validity of the findings, further distinguishing this paper from previous research efforts. Finally, by providing actionable insights for restaurant managers and policymakers, the study bridges the gap between theory and practice, offering practical guidance for implementing environmentally sustainable development strategies. This emphasis on real-world applications enhances the relevance and impact of the research, further distinguishing it from existing theoretical studies.*

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Perceived authenticity of green influencers: An experiment on components and determinants

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Abstract

This research examines how the authenticity components affect consumer perceptions of green influencers' sponsored and non-sponsored communications and their influence on sustainable behavioral intentions. In an experimental study involving 486 participants, we assess the impact of the six authenticity components—accuracy, connectedness, integrity, legitimacy, originality, and proficiency, as identified by Nunes, Ordanini, and Giambastiani (2021)—on consumers' intentions within the realm of green influencers. In addition, an exploratory cluster analysis identifies distinct consumer segments based on their evaluation of these components in judging the effectiveness of green influencers' communication. Our results illuminate the diverse ways consumers perceive authenticity, showing that authenticity judgments not only differ based on the consumption context but also vary individually, as consumers attribute different levels of importance to these components.

Key words: *Green influencers; Authenticity; Green Marketing; Influencer Marketing*

Framing of the research. *Firms are increasingly relying on green influencers – social media figures who advocate for minimizing or eliminating the negative environmental impacts of human behavior (Jacobson and Harrison 2022), to promote a greener brand image when communicating in the digital landscape (De Fano, Schena, and Russo, 2022). Similar to traditional influencers, these individuals act as independent third-party endorsers, shaping audience attitudes through blogs, tweets, and other social media platforms (Freberg et al., 2011, p. 90).*

Green influencers, while recognized as highly effective communicators in the digital realm, particularly with younger audiences, face a significant challenge when aligning with corporate interests (Zollo et al., 2020). Their promotional partnerships with companies, particularly in the form of sponsored content, often lead to a perceived reduction in their communicative effectiveness. This is largely due to the risk such sponsorships pose to green influencers' perceived authenticity (Audrezet, De Kerviler and Moulard, 2020). Followers may perceive these influencers as compromising their values for financial gain, leading to negative reactions to sponsored posts and skepticism about the underlying marketing intentions (Xie and Feng, 2023). As a result, an influencer's authenticity can be compromised by the intrusion of brands into their content.

Purpose of the paper. *Recent literature has attempted to explain why some collaborations between green influencers and firms succeed while others do not, focusing on communication strategies to preserve authenticity in sponsored content (Audrezet, De Kerviler and Moulard, 2020). However, this research is based on a conceptualization of authenticity viewed as a monolithic construct, overlooking how perceptions of authenticity can significantly vary depending on different consumption contexts (Morhart et al., 2015)*

With the aim to provide a finer grained understanding of the determinants of green influencers' authenticity, we first build on the most recent contributions on authenticity, which consider it as the result of a holistic assessment of six component judgments: accuracy, connectedness, integrity, legitimacy, originality, and proficiency (Nunes, Ordanini, and Giambastiani, 2021). According to recent literature, we consider authenticity a higher-order construct comprising various components each one contributing to the perceived authenticity of an experience. Building on the findings of Nunes et al. (2021), our research aims to identify which components of authenticity are most significant for consumers in evaluating green influencers and in predicting sustainable behavioral intentions in both sponsored and non-sponsored content. Specifically, our study aims at responding to two interviewed research questions: RQ1: Which are the most important authenticity components in the context of green influencers communications? RQ2: How the relevance attributed to each authenticity component shapes judgments about sponsored communications?

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Methodology. To answer our research questions, we run an experiment with a sample of 496 active social-media users recruited on Prolific Academic (Mage = 28.39, 49% female). The study employs a 2 groups (sponsored vs. non-sponsored) between subjects' design. At the beginning of the study, we provided participants with a definition of green influencers, which are "social media influencers whose main goal is to promote sustainable, ecological, and environmentally friendly habits (e.g., choosing biological foods, buying organic clothing, recycling, and waste reduction). In general, green influencers promote actions aimed at minimizing or eliminating negative effects of human behavior on the environment." We then asked participants to indicate how many of these influencers they follow on social media. Only participants who follow at least one green influencer were considered eligible to complete the study.

Participants indicated the name of one green influencer they follow and on which social media they follow this green influencer. After this, we provided all participants with a description of two types of content that green influencers can create: (1) sponsored content, where the green influencer develops content in collaboration with a brand or another entity that is financially supporting the creation of that content (paid advertisement) and clarified that when the content is sponsored, influencers have to signal that to their audience; and (2) non-sponsored content, where the content created by the green influencer is not developed in collaboration with a brand or another entity, so the green influencer is not receiving extra monetary compensation for the creation of that content (no advertisement). We then randomly assigned participants to the two conditions and asked them to describe the typical post that their chosen green influencer creates when publishing sponsored (vs. non-sponsored) content. We also asked participants to specify which kind of green behavior the influencer was communicating. We collected our main dependent variable, behavioral change intentions, by asking respondents to indicate how likely they would change their behavior following the advice of this green influencer's sponsored (vs. non sponsored) content on a scale going from 1 = Not at all to 5 = Very much.

After collecting our main dependent variable, we provided participants with a list of 20-items developed using the authenticity component's definitions by Nunes et al. (2021). For each of the six components, participants rated the importance of to three to four items describing a specific characteristic aligned with the components' definitions. Among those items we also included an attention check question. In Table 1, we report the full list of items together with the corresponding Cronbach's alpha calculated for each authenticity component.

Table 1. List of items for each authenticity component and Cronbach's alphas

Component	Item	Alpha
Accuracy	The extent to which you consider the green influencer as sincere in their communications	.86
	The extent to which you consider the green influencer as transparent in how they communicate	
	The extent to which you consider the green influencer to be reliable in terms of what they communicate	
Connectedness	The extent to which you feel connected and engaged by the green influencer's communication	.79
	The extent to which you feel inspired to change your behavior by the green influencer's communication	
	The extent to which you see the green influencer as someone like you	
Integrity	The extent to which the green influencer really believes in what they are doing	.75
	The extent to which the green influencer is not acting out of its own financial interests	
	The extent to which you consider the green influencer's communication as consistent over time	
Legitimacy	The extent to which you see the green influencer behaving coherently with what s/he is advising	.80
	The extent to which you see the green influencer following the common rules and norms in the social media platform	
	The extent to which the green influencer has a high number of followers	
Originality	The extent to which the green influencer has a verified profile	.72
	The extent to which the green influencer is recognized as highly influential by other influencers	
	The extent to which the green influencer's communication is unique	
Proficiency	The extent to which the green influencer stands out from the mainstream	.75
	The extent to which the green influencer is able to communicate without unnecessary frills	
	The extent to which the green influencer is properly knowledgeable about sustainable topics	
	The extent to which the green influencer shows skills and abilities	
	The extent to which the green influencer has expertise in their sustainable domain	

Ratings given on the scale: Not at all important (1) Slightly important (2) Moderately important (3) Very important (4) Extremely important (5)

Results. Overall, 11 participants failed the attention check question and were therefore removed from the analysis, leaving a final sample size of 486 respondents (247 in the sponsored condition and 239 in the non-sponsored condition, keeping the removed participants does not change the results). Considering the satisfactory levels of the Cronbach's alphas, for each of the six components, we created one unique measure averaging the items scores. We report in Table 2 the summary statistics of the main variables included in our analyses

Table 2. Summary statistics

Variable	N	Mean	SD	Min	Max
Intention to change behavior	486	3.54	1.09	1	5
Accuracy	486	4.22	0.76	1	5
Connectedness	486	3.65	0.86	1	5
Integrity	486	4.17	0.67	1	5
Legitimacy	486	2.82	1.00	1	5
Originality	486	3.49	0.82	1	5
Proficiency	486	4.03	0.72	1	5
N of influencers followed	486	3.20	2.41	1	10
Age	486	28.05	7.43	19	59

Mean score values for each authenticity component are above the scale mid-point, indicating that these are overall relevant for consumers in the decision-making process. In addition, some components seem to be more relevant than others, we see accuracy ($M = 4.22$, $SD = 0.76$) and integrity ($M = 4.17$, $SD = 0.67$) appear as the most important components, followed by proficiency ($M = 4.03$, $SD = 0.72$), then by connectedness ($M = 3.65$, $SD = 0.86$), originality ($M = 3.49$, $SD = 0.82$) and lastly by legitimacy ($M = 2.82$, $SD = 1.00$). In Table 3 we include the pairwise correlations among the key variables of interest.

Table 3. Pairwise correlations among variables

	Cond.	B. change	Acc.	Conn.	Int.	Leg.	Orig.	Prof.	N of inf foll
Condition	1.000								
Behavior change	-.171**	1.000							
Accuracy	-.054	.292**	1.000						
Connectedness	-.005	.386**	.534**	1.000					
Integrity	-.023	.261**	.634**	.479**	1.000				
Legitimacy	.018	.189**	.119**	.309**	.093*	1.000			
Originality	.028	.309**	.391**	.509**	.378**	.373**	1.000		
Proficiency	-.028	.324**	.585**	.472**	.547**	.214**	.475**	1.000	
N of inf followed	-.054	.280**	.035	.166**	.048	.103*	.142**	.040	1.000

* Indicates significant at $p < .05$, ** Indicates significant at $p < .01$

Looking at the values, we see a negative significant correlation between the variable condition (sponsored content vs. non-sponsored content) and behavioral change intentions. We also see significant positive correlations among each of the six components and with behavioral change intentions. We also note that the numbers of green influencers followed is significantly correlated with behavioral change intentions, indicating an overall positive relationship between interest in green influencers and intentions to behave more sustainably. Importantly we find no significant correlations between the six authenticity components and our manipulation, indicating that the importance of each component does not vary according to the condition. In Table 4 below we include the results of the pairwise comparisons of score values' importance between the two conditions. In line with the results of Table 4, we confirm the absence of significant differences in the importance of each component for participants in the sponsored vs. non-sponsored content conditions when deciding whether to follow the advice of a green influencer or not.

Table 4. Pairwise comparisons of components across conditions

Component	Sponsored Mean (SE)	Non-sponsored Mean (SE)	t(484)	p-value
Accuracy	4.18 (.05)	4.26 (.05)	1.19	.236
Integrity	4.15 (.04)	4.18 (.04)	0.51	.610
Proficiency	4.05 (.04)	4.01 (.05)	0.62	.535
Connectedness	3.65 (.06)	3.66 (.05)	0.10	.921
Originality	3.52 (.05)	3.47 (.05)	-0.61	.541
Legitimacy	2.81 (.06)	2.81 (.07)	-0.41	.685

We then assessed whether there are differences in participants intention to change their behavior following the recommendations of the green influencer when the content is sponsored (v. non sponsored). We expect non-sponsored content to be considered as more impactful due to the lack of a clear commercial nature (i.e., without financial supporting for the creation of the content). Indeed participants reported a higher likelihood to follow the advice of the green influencer when the content they described was non-sponsored compared to the sponsored one ($M_{non-sponsored} = 3.72$, $SD = 1.92$ vs. $M_{sponsored} = 3.35$, $SD = 1.13$, $F(1, 484) = 14.50$, $p < .001$, Cohen's $d = 0.34$). This indicates a general tendency of consumers to penalize sponsored content, resulting in a lower likelihood to engage in sustainable behaviors whenever there is a declared commercial partnership between the green influencer and another organization.

To test the role of each authenticity component in shaping the negative effect of sponsored (vs. non-sponsored) content on behavioral change intentions we conducted a regression analysis with behavioral change intentions as dependent variable, and condition (sponsored vs. non-sponsored) together with the six authenticity components and the interactions between condition and the six as main independent variables. Since the numbers of influencers followed appears to be significantly correlated with several of our variables of interest, we include it as a control in the model. Table 5 below reports the results of the two regression analyses.

Table 5. Linear regressions results

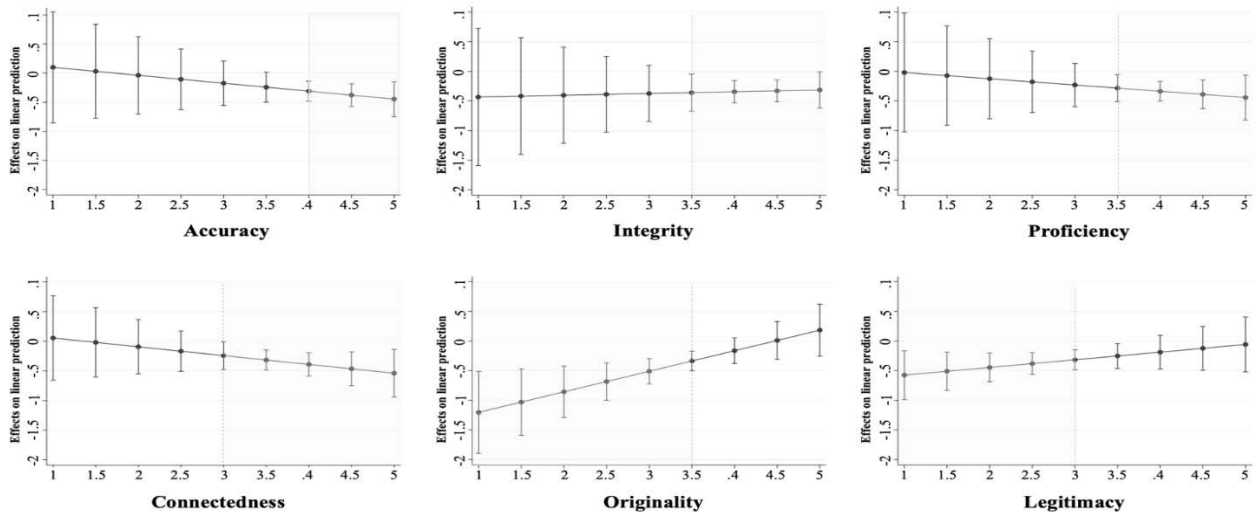
	Model 1 – Behavioral Change Intentions		Model 2 – Behavioral Change Intentions	
	Coeff.	p-value	Coeff.	p-value
Sponsored	#CAMPO! (.09)	.000	-0.50 (.53)	.352
Accuracy	0.06 (.08)	.407	0.14 (.11)	.210
Accuracy x Sponsored			-0.14 (.15)	.368
Connectedness	0.25 (.07)	.000	0.34 (.09)	.000
Connectedness x Sponsored			-0.15 (.13)	.269
Integrity	0.03 (.09)	.728	0.00 (.13)	.997
Integrity x Sponsored			0.03 (.18)	.868
Legitimacy	0.05 (.05)	.363	-0.00 (.07)	.951
Legitimacy x Sponsored			0.13 (.10)	.210
Originality	0.10 (.07)	.146	-0.06 (.08)	.504
Originality x Sponsored			0.35 (.14)	.012
Proficiency	0.21 (.08)	.016	0.23 (.12)	.064
Proficiency x Sponsored			-0.11 (.17)	.534
N of inf followed	0.10 (.02)	.000	0.09 (.02)	.000
Constant	1.10 (.30)	.005	0.82 (.35)	.019
R-squared	.26		.28	
N	486		486	

Note: VCE Robust standard errors appear in parenthesis

Looking at the regression’s coefficients, we see connectedness appears as a strong significant predictor regardless of content type. While it appears that the importance of originality shapes the effect differently whether the content is sponsored or non-sponsored.

We further run conditional marginal analyses to look at the effect of sponsored vs. non-sponsored content on behavioral change intentions at every degree of importance for each of the six authenticity components. This analysis increases the informativeness of our results, as values in the regression table are taken at means, while the six components are measured on continuous scales going from 1 to 5. Furthermore, mean importance scores range from 4.22 (the average importance of accuracy) to 2.82 (the average importance legitimacy). We used the floodlight approach (i.e., Johnson-Neyman technique), which allows to calculate the conditional value of condition – comparing sponsored to non-sponsored content – across all range of values for each one of the six components. We report the results of these moderating analyses below and summarize in Figure 1 the marginal linear predictions effects with 95% Confidence Intervals (CIs) displayed.

Figure 1 Conditional Marginal effects of sponsored content with 95% CIs



Taken together, our results indicate a main negative effect of sponsored (vs. non sponsored) communication from green influencers on participants' behavioral change intentions. In addition, the conditional marginal analyses calculated for each of the six authenticity components reveal this effect is more nuanced than expected. Different levels of importance attributed by participants at each of the different authenticity components lead to different reactions.

On the one side, three components seem particularly relevant for companies that want to make use of green influencers to sponsor a product or service, these are accuracy, proficiency, and connectedness. In fact, consumers who attribute more value to these aspects ($JN > 4$ and 3.5 respectively) significantly punish sustainable sponsored content by lowering their behavioral change intentions. At the same time, our results indicate that targeting consumers who do not attribute high value to accuracy, proficiency, and connectedness might be a successful strategy as they do not react differently depending on content type.

On the other side, two other components seem particularly strategic for companies that want to make use of green influencers to sponsor a product or service, these are originality and legitimacy. Consumers who attribute more value to originality and legitimacy ($JN > 3.5$ and 3 respectively) consider sustainable sponsored content as highly as non-sponsored content. So, our results indicate that targeting consumers who do attribute high value to originality and legitimacy might be a successful strategy as they do not react differently depending on content type.

When it comes to integrity, our results suggested a somehow unexpected effect, such that consumers who attribute more value to this component ($JN > 3.5$) have a reduction in the negative effect of sponsored vs. non-sponsored content on behavioral intentions. This result seems to indicate that targeting consumers who attribute high value to integrity might be optimal.

In addition to that, we run an exploratory cluster analysis (Everitt, 1992) aimed at identifying different groups of consumers who assign distinct importance to the authenticity components when making a judgment about green influencers' communication effectiveness. We used a k-means clustering method, which selects a pre-determined number of observations to be used as group means. Afterwards each observation is assigned to the group whose mean is closest, and then, based on that categorization, new group means are determined. This allows to break observations into a distinct number of nonoverlapping groups.

By experimental design, we randomly assigned participants to either evaluate sponsored or non-sponsored content, therefore we run two separate cluster analyses, one for each experimental condition. As additional investigation, we run an exploratory cluster analysis on all the observations, regardless of condition. Results are reported in Table 6.

Table 6: Cluster Analysis Condition

A. SPONSORED CONTENT									
Variable	Cluster			T-test					
	A1	A2	A3	1vs2	Signif	1vs3	Signif	2vs3	Signif
Accuracy	4,49	4,54	3,4	-0,05	N.S.	1,09	0	N.S.	0
Integrity	4,43	4,39	3,55	0,04	N.S.	0,88	0	N.S.	0
Proficiency	4,48	4,12	3,36	0,36	0	1,12	0	N.S.	0
Connectedness	4,2	3,78	2,88	0,42	0,0001	1,32	0	N.S.	0
Originality	4,02	3,61	2,85	0,41	0,0001	1,17	0	N.S.	0
Legitimacy	3,77	2,08	2,74	1,69	0	1,03	0	N.S.	0
Behavior Change	3,87	3,29	2,86	0,58	0,0006	1,01	0	N.S.	0,012
Age	29,04	27,27	27,45						
Female	0,48	0,56	0,39						
N	82	90	75						
B. NON SPONSORED CONTENT									
Variable	Cluster			T-test					
	B1	B2	B3	1vs2	Signif	1vs3	Signif	2vs3	Signif
Accuracy	4,47	4,58	3,48	-0,11	N.S.	0,99	0	N.S.	0
Integrity	4,37	4,44	3,52	-0,07	N.S.	0,85	0	N.S.	0
Proficiency	4,29	4,22	3,46	0,07	N.S.	0,83	0	N.S.	0
Connectedness	4,15	3,8	2,76	0,35	0,003	1,39	0	N.S.	0
Originality	4,03	3,37	2,86	0,66	0	1,17	0	N.S.	0
Legitimacy	3,92	2,12	2,36	1,8	0	1,56	0	N.S.	0,0295
Behavior Change	4	3,84	3,16	0,16	N.S.	0,84	0	N.S.	0
Age	30,11	26,24	30,84						
Female	46%	60%	41%						
N	83	95	61						

Taken together, results of the cluster analyses indicate a pattern of stability in authenticity evaluations, regardless of whether content is sponsored. Our data, in fact, reveal uniformity in how authenticity components are evaluated by corresponding clusters (A1-B1, A2-B2, A3-B3) in both sponsored and non-sponsored scenarios. Revealing that the assessment of the importance of the six components is relatively stable for consumers when judging green influencers

sponsored and non-sponsored communication. This suggests a consistent framework used by consumers in judging the authenticity of green influencers' communication.

Importantly, our findings reveal that the intention to change behavior varies significantly among the clusters, particularly influenced by the nature of the content—sponsored or non-sponsored. For individuals valuing tangible authenticity and expertise over perceived social authority or trendiness (those in clusters A2 and B2) exposure to sponsored content correlates with a lower intention to change behavior. Conversely, for the other participants the propensity to change behavior seem to remain stable, unaffected by whether the content is sponsored. For those valuing authenticity not just for its informational content but also for its relational depth (clusters A1 and B1) the persuasive capacity of green influencers remains robust, while for those that are skeptical in their engagement with influencer content (cluster A3 and B3) the intention to change behavior is generally lower, regardless of the content's sponsorship status.

The two cluster analyses indicate that despite being the least valued component, legitimacy varies considerably in its importance among the different clusters. This suggest that it is key for marketers to assess the extent to which their customers attribute value to legitimacy to select the appropriate green influencers.

Research limitations. While the study provides valuable insights, it acknowledges limitations such as the reliance on self-reported measures, which can be subject to biases. The experiment's design, focusing on a specific sample from Prolific Academic, may limit the generalizability of the findings. Future research could explore these dimensions in more diverse contexts and through longitudinal designs to capture the dynamic nature of authenticity perceptions. In addition, research might sought deeper into the relationship among sponsored content and green influencers by analyzing how the structure of the content proposed might hinder/foster behavioral change intentions.

Managerial implications. Overall, our results suggest that the role of each component can change not only according to the consumption context (Nunes et al. 2021), but also at the individual level, by manifesting differently according to consumers' distinct attribution of importance. As such our research underscores the importance of tailoring sponsoring strategies based on the specific authenticity components that resonate most with an influencer target audience. The process of identification and partnering might require an in-depth assessment of its audience to enhance the effectiveness of sponsored content.

Originality of the paper. This paper stands out by providing a granular analysis of authenticity in the context of green influencer marketing, a relatively underexplored area. It expands on existing literature by breaking down authenticity into its constituent components and examining their distinct roles in influencing consumer behavior towards sustainable practices. The study's methodological approach, combining experimental design with advanced statistical analyses, adds depth to the investigation, offering fresh insights into the interplay between authenticity, influencer content, and consumer intentions in the realm of sustainability.

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Problematizing on the three main pillars of sustainability from a paradox theory perspective

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Abstract

This article investigates the nuanced relationship between economic, environmental, and social sustainability, scrutinizing it through the Paradox Theory and contrasting the notions of "weak sustainability" and "strong sustainability." It delves into the academic discourse, contrasting the substitutability of natural and human-made capital posited by weak sustainability with the non-substitutable, interdependent approach of strong sustainability. This exploration is crucial for understanding the feasibility and implications of sustainability practices within organizations and societies, highlighting the complex interplay and challenges faced in striving for a sustainable future.

Key words: *sustainability, weak sustainability, strong sustainability, paradox theory, economic sustainability, environmental sustainability, social sustainability.*

Framing of the research. *This research critically examines the relationship between economic, environmental, and social sustainability, applying the Paradox Theory to explore the distinctions between "weak sustainability" and "strong sustainability." The core of sustainability lies in the interconnectedness of its three pillars: economic prosperity, environmental stewardship, and social equity. These elements are entwined in a complex relationship, influencing and impacting each other in various ways.*

Weak sustainability, drawing upon neoclassical economic theories (Solow, 1974; Hartwick, 1977), argues for the substitutability of natural and human-made capitals, suggesting that technological innovation can compensate for environmental degradation. This perspective, rooted in the belief of an optimal path for resource extraction and economic growth, posits that economic and technological advancements can ultimately offset the impacts of natural resource depletion. In contrast, strong sustainability underscores the irreplaceable value of natural capital, arguing that certain ecological functions and resources cannot be substituted by human-made capital (Daly, 1995). This view emphasizes the essential role of the environmental pillar as a foundation for sustaining economic growth and social well-being, highlighting the limitations of technological solutions in addressing ecological challenges.

Paradox Theory offers a framework for understanding the interplay and tensions between these sustainability models (Smith & Lewis, 2011). It suggests that achieving sustainability requires balancing conflicting yet interconnected objectives, recognizing the complexities and challenges inherent in this endeavor. This approach calls for strategic decision-making that navigates the paradoxes of sustainability, aiming for an equilibrium among the economic, environmental, and social pillars.

The debate between weak and strong sustainability reflects broader discussions within the sustainability discourse about the feasibility and implications of different approaches to balancing human development with ecological preservation. Critics of weak sustainability point to its overreliance on technological fixes and economic measures, arguing for a more integrated approach that acknowledges the fundamental importance of the environment in supporting all aspects of human life (Daly, 1995; Elkington, 1997).

This research contributes to the ongoing dialogue on sustainability by critically evaluating the assumptions underlying weak and strong sustainability paradigms. Through the lens of Paradox Theory, it highlights the necessity of embracing complexity and contradiction as central to navigating the path toward a sustainable future, where economic, environmental, and social objectives are pursued in harmony rather than in conflict.

Purpose of the paper. *By drawing on the nuanced relationship among economic, environmental, and social sustainability, the purpose of this research critically assesses the underlying definition of the p the Paradox Theory to explore the contrasting paradigms of weak and strong sustainability. The study's central aim is to understand how organizations can navigate the complex interplay of sustainability's three pillars and the implications of different sustainability approaches on corporate practices and policy-making.*

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Weak sustainability, influenced by neoclassical economic theories (Solow, 1974; Hartwick, 1977), suggests that natural and human-made capital are largely substitutable, proposing that technological advancements can mitigate the environmental costs associated with economic growth. This perspective envisions a path where economic development does not compromise the overall stock of global capital, leaning on the assumption that sufficient technological progress can counteract environmental degradation (Dietz and Neumayer, 2007). However, the research critically evaluates the feasibility of this approach, questioning the long-term viability of substituting ecological integrity with human ingenuity.

In contrast, strong sustainability emphasizes the irreplaceable value of natural resources, arguing against their substitutability with human-made capital (Daly, 1995). It posits that environmental sustainability should form the foundation upon which economic and social sustainability can be built, advocating for a paradigm shift that places ecological well-being at the core of sustainable development efforts. This perspective challenges the assumptions of weak sustainability, highlighting the limitations of economic growth and technological solutions in addressing ecological constraints.

Employing Paradox Theory (Smith and Lewis, 2011), the research examines the tensions between these sustainability paradigms, suggesting that sustainability efforts are fraught with conflicting objectives that require strategic balancing. This theoretical lens allows for a deeper understanding of how organizations might integrate economic, environmental, and social goals, despite the inherent contradictions between these objectives.

The study further investigates the practical implications of these sustainability paradigms, analyzing their manifestation in corporate strategies, urban development initiatives, and human resource practices. It seeks to bridge the theoretical discourse with practical applications, providing insights into achieving a sustainable equilibrium that reconciles economic development with environmental stewardship and social equity. By critically evaluating the principles of weak and strong sustainability and applying Paradox Theory, this research contributes to the sustainability dialogue, offering a nuanced perspective on the challenges and opportunities of navigating sustainability's complex landscape. It underscores the necessity of a comprehensive approach that directly links organizational practices to environmental and social outcomes, advocating for a shift towards a sustainability model that respects the interdependencies among its core pillars. Through this exploration, the study aims to foster a deeper understanding of how to promote a more sustainable future, emphasizing the importance of ecological integrity within the sustainability triad.

Methodology. *Our main goal is problematizing on the prolific domain of paradox perspective on corporate sustainability. To do so, the methodological procedure we followed is termed "theory synthesis" (Jaakkola 2020)," and aligns closely with the academic exploration into the intricate interplay among the three pillars of sustainability—economic, environmental, and social—within the framework of paradox theory on corporate sustainability. Such a methodological approach, involves the integration and synthesis of various theoretical perspectives to construct a novel, cohesive understanding of a complex phenomenon. The process of theory synthesis is instrumental in navigating the multifaceted and often conflicting dimensions of sustainability, addressing the need for a holistic view that encapsulates the interdependencies and tensions between these pillars.*

In embarking on this methodology, the discussion deliberately engages with the dichotomy between weak and strong sustainability paradigms, reflecting a critical examination of their underpinning assumptions and implications for sustainable development. Weak sustainability, with its roots in neoclassical economic theory, posits the substitutability of natural and human-made capitals, suggesting that technological innovation and economic mechanisms can offset environmental degradation. Conversely, strong sustainability emphasizes the intrinsic value of natural capital and its irreplaceability, advocating for a precautionary approach to resource management and environmental conservation. By problematizing these perspectives through the lens of paradox theory, this methodology fosters a deeper understanding of the inherent contradictions and complementary nature of these sustainability paradigms.

The choice of theory synthesis as the guiding methodology is justified by its capacity to bridge disparate theoretical landscapes and foster a nuanced exploration of sustainability. It allows for a re-conceptualization of sustainability that recognizes the essential, yet often paradoxical, relationships among its pillars. This approach mirrors Jaakkola's (2020) delineation of theory synthesis, which seeks to achieve conceptual integration across multiple theories or literature streams, offering a new or enhanced view of a concept or phenomenon. Through this lens, the research not only summarizes and integrates extant knowledge but also propels forward by synthesizing a comprehensive perspective that transcends the limitations of individual sustainability models.

This integrative endeavor is particularly pertinent in the context of corporate sustainability, where organizations grapple with the practical challenges of balancing economic, environmental, and social imperatives. By adopting a theory synthesis approach, the discourse elucidates the dynamic tensions and synergies between weak and strong sustainability, shedding light on the broader implications for strategic decision-making and sustainable business practices. In doing so, it aligns with the aspirations of paradox theory, as outlined by Smith and Lewis (2011), to accommodate interrelated yet conflicting concerns within corporate sustainability, fostering strategies that embrace and navigate these tensions.

In sum, the methodology of theory synthesis, as applied in this chat, serves as a foundational framework for deconstructing and reassembling the complex puzzle of sustainability. It underscores the value of integrating diverse theoretical insights to forge a more holistic, nuanced understanding of sustainability challenges and opportunities, thereby contributing to the ongoing discourse on sustainable development and corporate responsibility.

Results (Main argumentation). *Drawing on the paradox theory (Smith and Lewis, 2011) applied to sustainability, it explores the challenges organizations face in maintaining a balance among these pillars (Hahn et al., 2015). Weak sustainability, as advocated by the paradox theory, empowers organizations to maintain equilibrium among the three*

pillars through strategic decision-making (Hahn et al., 2018). However, existing research suggests that the implementation of such balancing strategies proves challenging for organizations, leading to ephemeral success (Ferraris et al., 2018; Matzembacher et al., 2020; Henry et al., 2020).

Weak sustainability, as understood from existing research, implies that natural and human-made capitals are interchangeable to some extent, allowing for technological solutions and human ingenuity to compensate for environmental degradation. This perspective is reflected in the emphasis on smart city projects and HR practices aimed at innovation and efficiency, suggesting an underlying belief in the ability to manage environmental challenges through technological advancement and organizational adaptability (Ferraris et al., 2018; Matzembacher et al., 2020; Henry et al., 2020).

The criticism that these studies are vague in defining the interconnections between social, environment, and business in the context of sustainability seems valid. While they explore innovative approaches to managing human resources and partnerships for sustainable urban development, they do not extensively delve into how these practices affect environmental sustainability or societal well-being directly. This gap leaves room for ambiguity regarding how business practices align with the broader goals of sustainability, particularly in balancing economic development with environmental protection and social equity.

For instance, Ferraris et al. (2018) focus on the role of human resource management in fostering both explorative and exploitative alliances in smart city projects. They argue that multinational enterprises utilize various partnerships and a "temporal separation" strategy to maximize the benefits of exploration and exploitation, tailored to the project's aim. This approach indirectly supports a form of weak sustainability by highlighting the balance and trade-offs between innovation (exploration) and operational efficiency (exploitation) in urban development. However, the paper could be critiqued for not clearly delineating the specific impacts on the societal, environmental, and business dimensions of sustainability, thus leaving the relationship among these aspects somewhat vague.

In supporting the statements regarding weak sustainability and the vagueness in the relationship among society, environment, and business, it's clear that while these studies contribute valuable insights into managing innovation and efficiency for sustainability, they also highlight a need for a more explicit articulation of how these practices integrate and impact the broader dimensions of sustainability. More comprehensive research could address these criticisms by directly linking HR practices and business strategies to specific environmental and social outcomes, thus clarifying the role of businesses in promoting not just technological solutions but also in fostering a sustainable balance among economic, environmental, and societal goals.

Organizations grapple with significant difficulties in contributing to the environmental pillar, despite the growing discourse on regenerative businesses (Hahn and Tempe, 2021). This is a result of our inherent dependence on the environment, emphasizing the illusory nature of temporary profits at the expense of ecological well-being. Balancing the three pillars theoretically is an ideal pursuit, yet practical implementation remains elusive. The environmental pillar, in particular, poses a challenge due to its unpredictable and uncontrollable nature (Hollings, 2001). The delicate interplay between economic, environmental, and social sustainability necessitates a nuanced understanding. While theoretical frameworks like weak sustainability offer organizational empowerment, the practical challenges of balancing these pillars underscore the complexity of achieving true sustainability.

Paradox refers to "contradictory, yet integrated elements that exist simultaneously and persist over time" (Smith & Lewis, 2011, p. 382). Although "contradictory" appears easy to grasp when it comes to sustainability objectives, our inquiry revolves around the word "integrated". How does it align with the sustainability domains? Here, it is worth recalling Hahn et al. (2018), who provided a definition of the paradox theory suited for the corporate sustainability: "A paradox perspective on corporate sustainability accommodates interrelated yet conflicting economic, environmental, and social concerns with the objective of achieving superior business contributions to sustainable development. Rather than seeking to align environmental and social aspects with financial performance to eliminate tensions (as the business case does), paradox perspective fosters strategies that accept tensions and attend to different sustainability objectives simultaneously, even if they are conflicting (Gao and Bansal 2013; Hahn et al. 2015)".

The paradox theory offers a lens through which to theoretically find a balance between interrelated yet seemingly contradictory objectives, revealing its limitation when objectives are not considered on the same level, as highlighted by weak sustainability. This perspective assumes that natural and human capital can be interchangeable, presupposing an equivalence that doesn't always reflect reality, especially when considering the environment relative to economic and social aspects.

Therefore, starting from the Cambridge definition of interrelated "connected in such a way that each thing has an effect on or depends on the other", the interrelation between the three sustainability pillars is not equitable in the case of environmental-economic relationship.

In the case of economy and environment, we have economy that has (negative) effect and economy that depends on, both aspects are not reciprocal, invertible.

For social-economic it is different because man is central and one supports the other in some way (dependence) and effect (negative) of economy on society when exploitation for profit.

The interdependence between social and economic pillars, given their common centrality of the human being and the fact that the social is partly fueled by the economic, could suggest a possible harmonization between these pillars.

However, the relationship with the environment remains distinct, underlining how the economic system, in its current configuration, often fails to adequately serve human needs in harmony with the environment.

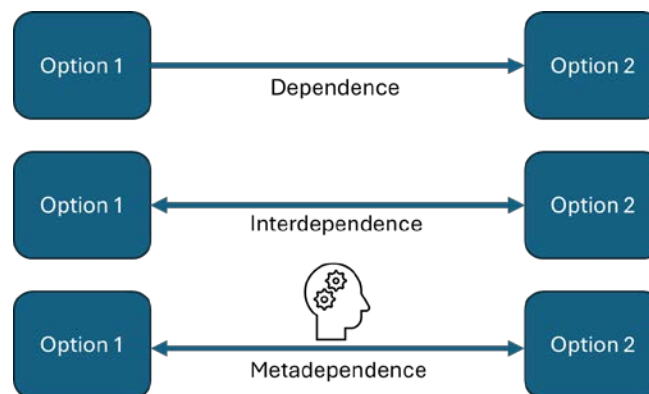
The interconnectedness of the economic and social pillars might indeed be more feasibly harmonized due to their common factor: the human element. In the society we inhabit, the social aspect is significantly fueled by economic dynamics, suggesting a level of mutual dependency between these two realms. However, this interdependence starkly contrasts with the relationship between these human-centric systems and the environment, which often appears to be disregarded or undervalued within the economic model. The prevailing economic system, theoretically designed to serve human needs, frequently fails to account for environmental sustainability, leading to a disconnect that threatens both current and future well-being.

On the other end it stands the strong sustainability. It posits that nature is essential to society (as we are part of it) and both society and nature are vital to the economic system, providing ecosystem services and actors that create value. The foundational principle of strong sustainability emphasizes preserving the economic value of natural capital, emerging as a response to the neoclassical weak sustainability paradigm. Advocates of strong sustainability recognize that in an "empty" world, where human-made capital is scarce and natural capital is plentiful, natural and human-made capital might be seen as substitutes. Yet, in today's "full" world, where natural capital is the scarce resource and human-made capital is abundant, these types of capital should be considered complements. This shift acknowledges natural capital as the constraint on economic growth, highlighting the necessity of preserving it (Daly 1995). In contrast to weak sustainability proponents, strong sustainability supporters are generally skeptical about the role of technological progress in overcoming environmental challenges. Daly (1995) also noted that embracing strong sustainability does not imply an absolute stance against the extinction of any species or the extraction of nonrenewable resources, but rather emphasizes a cautious approach to how these actions are undertaken, reflecting a profound respect for the irreplaceable value of natural capital.

In practice, the concept of strong sustainability offers a path forward by highlighting why certain issues, previously thought to be surmountable through technological advancement or economic growth, remain persistent challenges. This approach underlines the necessity of acknowledging and respecting the limits of natural systems and the indispensable services they provide, which are fundamental not just for the environment but for the very survival and quality of human life.

Emphasizing the connections between these domains—objective interdependence perceived by all, objective unilateral dependence, and metadependence (where there's no objective dependence or interdependence, but rather a mental willingness of interdependence among those who consider it)—is crucial.

Figure 1. Connection between domains (two options)



It highlights the complexity of our world, where economic and social endeavors cannot be sustainably pursued without a deep understanding and integration of environmental considerations. Strong sustainability, therefore, calls for a reevaluation of how we perceive dependencies and interdependencies, urging us to recognize the environment not as a subsidiary concern but as a central component of our collective existence and well-being. This reorientation requires a paradigm shift towards systems thinking, where the economic, social, and environmental pillars are seen not as separate entities but as interconnected parts of a single, dynamic whole.

Strong sustainability emerges as a practical approach that highlights the critical issues insurmountable through weak sustainability, drawing attention to the need for a system that not only recognizes but also respects the primacy of the environment as an indispensable foundation for human and social well-being.

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Track 14
Tourism & Culture Management

The evolution of sustainability discourses in online reviews: an investigation of the impact of triple bottom line dimensions on tourists' eWOM and destination satisfaction.

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Abstract

Although sustainable tourism is a widely used paradigm, research has mainly focused on the supply side and on the environmental dimension. The research about sustainability in tourism, with particular regard to socio-economic and cultural dimensions, is still scant, especially regarding how these dimensions are perceived by tourists.

Our research aims at filling that gap by examining to what extent international and local travelers visiting a destination that is to some extent suffering from overtourism engage in discussing online environmental, socio-economic, and cultural aspects of sustainability when reviewing online. We selected the destination of Iceland collecting 325,000 TripAdvisor reviews of 1445 Iceland attractions covering a ten-year time-frame (2013-2023) were analyzed through text analytics, combining a few specific dictionaries developed to study the online communication of sustainable tourism, CSR communication, and consumer sentiment. Combining text analytics with correlation and regression analysis, the findings reveal an increasing trend in tourists' attention to socio-economic aspects of sustainability (e.g., discussions about employees, human rights, community) while a decreasing trend with regard to the environmental aspects over time. Interestingly, tourists discussing socio-economic and cultural aspects reflect a more positive sentiment polarity in their reviews, while reviews focusing on environmental aspects being correlated with negative emotions. In addition, results from the regression analysis shows how socio-economic and cultural framed reviews positively relate to ratings, while environmentally framed reviews negatively relate to ratings. Destinations are thus suggested to increase their attention and communication toward the socio-economic and cultural aspects of their attraction to enhance customer satisfaction online.

Keywords: environmental sustainability; social sustainability; cultural sustainability; eWOM; Big data; online review

Framing of the research. Even though tourism usually proves beneficial for the economy of a destination, several studies have also highlighted its negative impact on the environment and the local communities, to the point that the 2030 Agenda for Sustainable Development Goals (SDGs) indicates the reduction of tourism negative effects as a priority of future sustainable development (UN, 2021; Confente et al., 2024). In this sense, sustainable tourism development is a common paradigm in both tourism research and tourism industry, with the aim to balance the needs of both present and future generations, in a way that considers economic, environmental, and socio-cultural aspects of tourism development (Mihalic, 2020). However, usually, the environmental dimension is the most adopted from the supply side and is the most well recognized by visitors (e.g. Confente & Scarpi, 2021).

The socio-economic and the cultural dimensions have been increasingly investigated, especially when it comes to considering destinations struggling with overtourism (Helgadóttir et al., 2019; Mihalic, 2020). In this vein, sustainable tourism has been increasingly focused on social issues, aiming at guaranteeing an equal distribution of benefits of tourism among all stakeholders involved (Marchi et al., 2020) and at mitigating the negative effects of tourism on the destination and on residents' quality of life, including overcrowding and gentrification issues (Zhang et al., 2017; Mihalic, 2020). Social sustainable tourism pays particular attention to the preservation of cultural heritage and traditional customs, to the point that some scholars argue that the cultural dimension should be a pillar on its own (Soini & Birkeland, 2014; Kim et al., 2019). Moreover, given the well-known problems of human resources management in the tourism sector (e.g. turnover, seasonality, low pay), work-related issues are also considered part of social sustainability discussions (Ladkin et al., 2023). In line with the Sustainable Development Goal (SDG) number 8 which aims at "promoting sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all", tourism research

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in the field of social sustainability mainly deals with human resources practices with a focus on the respect of human rights and decent conditions of work (Winchenbach et al., 2019).

With regards to the stakeholders involved in tourism research, most of the studies has mainly explored the perspective of residents' perception of social sustainability (e.g. Scarpi et al., 2022), of host communities (Zhang et al., 2017), cities (Marchi et al., 2020) or small tourism enterprises (Zhang & Zhang, 2018), whereas the tourists' perspective on the social dimension of sustainability has been rarely investigated in extant literature.

Hence, despite a few exceptions encompassing the three dimensions of sustainability for tourism (Choi & Sirakaya, 2006; Mejjad et al., 2022), there is a need for more research on tourists' perception of sustainability in destinations, including the social and cultural dimensions together with the more explored environmental one.

Tourists can play an active role of sustainable tourism development by behaving socially and environmentally responsibly, thus being actively involved in the multidimensional sustainability of tourism destinations (Ferrari et al., 2021). Tourist social responsibility awareness is understood as tourists' understanding of their own responsibility in impacting negatively on the destination, its residents, and the tourism employees, as well as in protecting the socio-cultural aspects of the destination they are visiting (Luo et al., 2020; Agapito et al., 2023). In addition, previous research highlights how tourists' perceptions of the social and environmental sustainability of the destination are fundamental to future behavior and loyalty (e.g., re-visit intention, WOM/eWOM) (Kim et al., 2018; Ferrari et al., 2021). Previous studies have related destination social sustainability to tourists' intention to visit (Su et al., 2020) and tourists' positive WOM (Saleh et al., 2023). The extant literature has, however, studied the dimensions of sustainability in a tourism destination mainly through self-reported measures via surveys, thus neglecting the potential attitude-behavior gap (Nieto-Garcia et al., 2024). Other studies that consider real e-WOM behavior were mainly focused on the hospitality industry and on environmentally-framed e-WOM (D'Acunto et al., 2020, 2023; Mariani & Borghi, 2020).

Purpose of the paper. This study explores the attention paid by tourists to different sustainable tourism dimensions when they travel to an overcrowded destination (for this study Iceland was selected). In particular, this exploratory research aims to shed light on the relationship between tourists' discussion of sustainability dimensions in online reviews regarding the attractions of Iceland they visited and the rating/satisfaction they experience in the destination.

For the above, this study aims at responding to the following exploratory research questions:

RQ1: to what extent do tourists traveling to Iceland discuss in their reviews the i) environmental, ii) socio-economic, and iii) cultural dimensions of sustainability over time?

RQ2: to what extent do the three dimensions of sustainability discussed in reviews correlate with the consumer sentiment?

RQ3: to what extent do the three dimensions of sustainability discussed in reviews relate to the customer satisfaction translated into a online rating of the destination attractions?

Methodology. Even though it was long considered a remote country and a hardly accessible tourism destination (Sæþórsdóttir & Hall, 2021), Iceland has recently seen an exponential growth in tourism numbers: arrivals ranged from 303,000 in 2000 and reached 2 million in 2019 (Icelandic Tourist Board, 2023), so that overtourism in the island has become a matter of concerns for both tourism scholars (Helgadóttir et al., 2019; Sæþórsdóttir & Hall, 2021) and tourism practitioners, as well as local communities. (Marcus, 2019; Tourtellot, 2018). This has overall had negative consequences on residents' quality of life (Helgadóttir et al., 2019). Moreover, also tourists' satisfaction has been impacted by excessive overcrowding in Iceland (Sæþórsdóttir & Hall, 2021).

We collected from Tripadvisor 325,000. online travel reviews of 1445 Iceland attractions (including museums, nature & parks, nightlife, sights & landmarks, spas & wellness, water & amusement parks, zoos & aquariums, fun & games) by means of a specific data crawler developed with Python. Data covers over ten years (2013–2023) including the COVID-19 period. Among the data collected there are also reviewers' demographics (e.g. age, gender, country of origin), type of trip (e.g. business, couples, families, friends, solo), the device of posting (mobile, laptop), the reviewer performances on the platform (e.g. n° of contributions, n° of followers, total points, badges, helpful votes received), the review rating (scale 1-5) and both the review textual (e.g. review text, review title, review answer) and visual (e.g. review pictures) content.

We adopted a longitudinal design and analyzed the data through automated text analysis to identify and describe consumer feedback patterns over time. In particular, we employed TripAdvisor reviews to explore whether and how tourists discuss the different dimensions of sustainability when evaluating their attraction experiences.

The software chosen to detect sustainability-related semantics is the Linguistic Inquiry Word Count (LIWC) (Pennebaker et al., 2015), an established tool widely adopted to study customer reviews within the tourism (e.g. Yousaf & Kim, 2023; Liu et al., 2019; Ma et al., 2018) and marketing (e.g. Kim et al., 2018; Hewett et al., 2016; Ludwig et al., 2013) domain. LIWC allows processing a given text based on specific dictionaries converting unstructured textual data into structured data (i.e. numerical outputs), expressed as a ratio between the number of times a specific term included in the dictionary appears in the text out of the total word count of such text. This approach is deemed appropriate to analyze big data such as online texts in an accurate and speedy way and to reduce subjective interpretation in coding.

For the purpose of this study we combined three different dictionaries, developed and validated by their authors:

1) The sustainable tourism communication dictionary (Marchi et al., 2023). We relied on this dictionary to identify the recurring sustainability dimensions from the consumer side. This dictionary is an ad-hoc set of keywords developed in the specific domain of tourism and across the 1) environmental, 2) the socio-economic and 3) the cultural

dimensions of sustainability. The environmental dimensions considers: i) Tours/excursions/activities that respect natural sites, green and protected areas, ii) Green practices and iii) Protection of natural environment and landscape with different subtopics. The socio-economic dimensions encompasses i) Support to the local economy, ii) Promotion of local markets and food, iii) Help threatened sites through donations or volunteering, iv) Community support, v) Accessible Tourism for, vi) Safety and security, vii) Human rights, each topic with a focus on different subtopics. The cultural dimension revolves around i) Cultural valorization and ii) Decorum visiting heritage.

- 2) Positive/negative emotions LIWC categories: we used the LIWC internal dictionary to detect the affective content in reviews and to run a sentiment analysis determining the presence of positive and negative emotions embedded in reviews' text, in line with extant research in marketing (e.g. Ludwig et al., 2013; Hewett et al., 2016).
- 3) The CSR dictionary (Pencle & Mălăescu, 2016): while this tool having been adopted in the tourism domain for automated content analysis of consumer generated content (e.g. Mariani & Borghi, 2023; D'Acunto et al., 2023) it has been primarily formulated and developed to investigate CSR communication by the supply side rather than sustainability. We thus rely on the dimension of "Employees" which is currently missing in the sustainable tourism communication dictionary by Marchi et al., (2023), thus merging it to the "socio-economic" dimension of this latter. Table 1 summarizes the structure of the dictionaries used for the analysis.

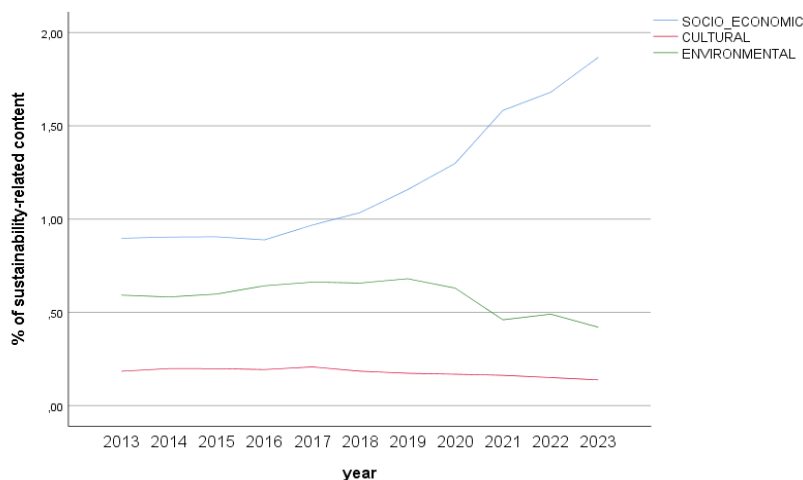
Table 1 Dictionaries used in the analysis

Category	N° of terms	Examples of keywords	Source
Environmental	121	ecologic* biologic*, biodegradable, low impact*, protected area*, green area*, recycl*, food waste	Marchi et al. (2023)
Socio-economic	99	local economy, fair price, local market*, traditional market*; short food supply chain, km0, local community, human right*, lgbt	Marchi et al. (2023)
Cultural	32	cultural heritage*, historical culture, unesco, archeological artefact*, graffiti, cultural event*, intangible heritage*, damage*, touch, behave	Marchi et al. (2023)
LIWC – Positive emotions	620	Love, nice, sweet	Pennebaker et al. (2015)
LIWC – Negative emotions	744	Hurt, ugly, nasty	Pennebaker et al. (2015)
Employees	319	Diversification, Employee Well-Being, Employee Equity, Minorities, Participatory, Certify	Pencle & Mălăescu (2016)

*stemmed words

Results. The findings (RQ1) exhibit how, since 2016, tourists traveling to Iceland have started paying an increasing attention to the social aspects of sustainability (e.g. i) Support to the local economy, ii) Promotion of local markets and food, iii) Help threatened sites through donations or volunteering, iv) Community support, v) Accessible Tourism, vi) Safety and security, vii) Human rights) when reviewing online their attraction experience. Conversely, the trend of environmentally-related elements (i) Tours/excursions/activities that respect natural sites, green and protected areas, ii) Green practices and iii) Protection of natural environment and landscape) in reviews has been slightly increasing until 2019, then it started decreasing. The cultural dimension discussed in reviews shows a flat pattern and it results the less discussed overall.

Figure 1 Sustainability-related content in reviews over time



When focusing on the single dimensions of sustainability discussed by travelers in their reviews, we then investigated the sentiment polarity of sustainability-framed customer reviews. We thus attempted to respond to our RQ2 by means of a Pearson correlation analysis, considering the three dimensions of sustainability and the level of affective content embedded in reviews, expressed by positive and negative emotions respectively.

The main findings show how the social dimension (.204**, -.48**) and cultural (.024**, -.10**) related content in reviews results positively correlated with positive emotions and negatively correlated with negative emotions, meaning travelers discussing such elements having positive sentiment polarity. Conversely, the environmental content in reviews shows a negative correlation with positive emotions (-.60**) indicating that customers who discuss environmental aspects tend to express themselves with a negative valence. Table 2 shows the Pearson correlation matrix.

Table 2 Pearson correlation matrix

Correlations		ENVIRONMENTAL	SOCIO_ECONOMIC	CULTURAL	posemo	negemo
ENVIRONMENTAL	Pearson Correlation	1	-.082**	,005**	-.060**	,002
	Sig. (2-tailed)		,000	,005	,000	,362
	N	325723	325723	325723	325723	325723
SOCIO_ECONOMIC	Pearson Correlation	-.082**	1	-.045**	,204**	-.048**
	Sig. (2-tailed)	,000		,000	,000	,000
	N	325723	325723	325723	325723	325723
CULTURAL	Pearson Correlation	,005**	-.045**	1	,024**	-.010**
	Sig. (2-tailed)	,005	,000		,000	,000
	N	325723	325723	325723	325723	325723
posemo	Pearson Correlation	-.060**	,204**	,024**	1	-.157**
	Sig. (2-tailed)	,000	,000	,000		,000
	N	325723	325723	325723	325723	325723
negemo	Pearson Correlation	,002	-.048**	-.010**	-.157**	1
	Sig. (2-tailed)	,362	,000	,000	,000	
	N	325723	325723	325723	325723	325723

** . Correlation is significant at the 0.01 level (2-tailed).

In addition, we focus on the role of sustainability-framed reviews in shaping customer satisfaction of travelers visiting Iceland and reviewing its attractions online (RQ3). For this purpose, a regression analysis (OLS) was carried out (table 3), considering as dependent variable the review score rating (ranging 1-5) as a proxy of the overall customer satisfaction with the reviewed attraction, and the three dimensions of sustainability (environmental, socio-economic, cultural) as predictors. Furthermore, few control variables have been included in the model relying on extant eWOM literature, such as the word count (WC) of the review (Chevalier & Mayzlin, 2006), the reviewer age cohort (Gao et al., 2018), the review submission device (i.e. desktop vs. mobile) (Mariani et al., 2019) and the reviewer country of origin comparing local travellers (i.e. Icelanders) versus international travelers (D'Acunto et al. 2023).

Our focal variables main findings exhibit how, while the social (.048**) and cultural (.012**) elements discussed in reviews positively relate with ratings, the environmental dimension negatively relates with ratings (-.012**). These findings indicate that, when travelers focus on the socio-economic and cultural elements of sustainability while reviewing online their attraction experience they tend to rate higher their overall experience. Conversely, when they include environmental aspects in their reviews they tend to rate lower.

With regards to the control variables, findings show how travelers posting reviews from mobile are associated to lower score ratings compared to those ones posting from desktop. This result contrasts previous findings (Mariani et al., 2019) who found a consistently higher valence of mobile eWOM versus desktop eWOM. As a possible explanation, when customers are less satisfied of their tourist attraction they tend to leave negative feedbacks to punish suppliers sooner thus using their mobiles rather than once at home. The country of origin is also found to affect the rating score, with local tourists (i.e. Icelanders) associated with higher score ratings compared to international tourists. As a possible explanation for this finding, the high environmental performance index of Iceland, which ranks 10th worldwide (EPI, 2022) might affect the environmental culture of their residents, resulting in a higher sensitivity for sustainability aspects, in line with D'Acunto et al. (2023). The age cohorts of travellers show a negative relationship with ratings, meaning younger reviewer are more satisfied and convert their satisfaction into higher score ratings.

Table 3 OLS Regression analysis

Coefficients ^a		Unstandardized Coefficients		Standardized Coefficients		t	Sig.
Model		B	Std. Error	Beta			
1	(Constant)	4,645	,013			355,908	,000
	ENVIRONMENTAL	-.012	,002	-.020		-5,830	,000
	SOCIO_ECONOMIC	,048	,002	,081		24,204	,000
	CULTURAL	,012	,003	,012		3,513	,000
	review_device_code	-.046	,006	-.025		-7,363	,000
	reviewer_from_Iceland	,069	,025	,009		2,822	,005
	Age_cohort	-.017	,003	-.023		-6,688	,000
	Word count	,000	,000	-.045		-13,308	,000

a. Dependent Variable: review_rating; N: 325,723; adj. R2: 0.010; F: 129,488

Research limitations. *The main limitations of this ongoing study are related to the quantitative nature of the methodology employed. In fact, this research does not provide an in-depth understanding of tourists' perceptions of social and cultural dimensions of sustainability. Future research should go deeper into the data by qualitatively exploring the recurring topics discussed in socially-framed reviews as well as understanding the valence of tourists' narratives in socially-framed reviews, through a content analysis or a netnography.*

Managerial implications. *This study provides relevant managerial implications. In fact, considering social sustainability pivotal reveals to be convenient for destination management, especially for those destinations suffering from overtourism. Such measures not only foster sustainable practices but also contribute to enhanced visitor satisfaction and positive reviews online, thereby amplifying the overall attractiveness and competitiveness of tourism attractions. Consequently, it is imperative for destination stakeholders to acknowledge and integrate the intricate interplay between social sustainability, visitor experience, and online reputation management into their strategic planning and operational frameworks.*

Originality of the paper. *This ongoing research will contribute to the sustainable tourism literature, highlighting that visitors do care about different aspects of sustainability and express their concerns and experiences through online reviews. In particular, this study shows that a rising awareness of the social dimension can be underscored in online discussions among tourists, thus presenting an interesting advancement of previous literature.*

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Generazione Z e percezione delle sostenibilità nella scelta del servizio alberghiero

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Abstract

In letteratura la generazione Z, rappresentata da individui nati tra il 1996 e il 2010, è descritta come profondamente immersa nelle tecnologie digitali ed è cresciuta in un contesto dominato da globalizzazione e cause ambientali con uno spiccato senso di responsabilità nei confronti della sostenibilità ed il futuro del pianeta.

Il presente studio analizza il ruolo della sostenibilità nella scelta alberghiera della Generazione Z, con un'attenzione specifica al genere. Metodologicamente, attraverso analisi descrittive ed inferenziali, utilizzando dati raccolti tramite un questionario distribuito a circa 600 individui, si evidenzia che, in questo campo, la sostenibilità è considerata parzialmente rilevante rispetto ad altri aspetti di base come il prezzo, la pulizia e i servizi. Inoltre, emergono differenze significative nella percezione della sostenibilità tra i generi e tra coloro che si auto-definiscono sostenibili e non sostenibili.

Key words: generazione Z, ospitalità, sostenibilità, genere, servizio alberghiero

Framing of the research. *L'emergenza sanitaria da COVID 19 ha influito fortemente sull'attività delle imprese e sul comportamento di acquisto dei consumatori (Donthu & Gustafsson, 2020, Pantano et al., 2020). In particolare, in seguito alla pandemia, si nota una crescita dell'interesse dei consumatori nei confronti della sostenibilità (Pelikanova et al., 2021). Soprattutto i fattori ambientali sono sempre più considerati dai turisti durante il processo di scelta (Robinot & Giannelloni, 2010). Lo studio dell'importanza attribuita dai viaggiatori ai fattori legati alla sostenibilità nel processo di acquisto risulta quindi di particolare importanza per le imprese turistiche al fine di sviluppare le più appropriate strategie di sviluppo. L'approfondimento dello studio della percezione della sostenibilità da parte dei turisti, e di come questo contribuisca ad influenzare il processo di acquisto, offre infatti interessanti implicazioni manageriali, oltre a contribuire agli studi relativi ai driver di scelta del servizio alberghiero (Madar & Neaşu, 2020). Anche se l'interesse nei confronti della sostenibilità è cresciuto nel corso degli ultimi anni, solo alcuni studi analizzano nello specifico la percezione dei turisti delle pratiche sostenibili (Lin, 2017; Sanchez-Fernandez et al., 2019). Il presente studio si propone quindi di contribuire alla ricerca in corso sul tema della percezione della sostenibilità, in tutte le sue dimensioni (Han, 2021), da parte dei turisti nella fase di decisione di acquisto, con particolare riferimento alla scelta del servizio alberghiero. Inoltre, lo studio si focalizza sulla Generazione Z che viene considerata particolarmente attenta ai temi della sostenibilità (Monaco, 2018; Kafková, 2019; George & Leidner, 2019). Vari studi hanno dimostrato come alcune variabili sociodemografiche come età e genere possano influenzare i comportamenti della clientela legati alla sostenibilità (Yeoman and McMahon-Beattie, 2019; Smith & Kingston, 2021). La generazione, in particolare, rappresenta una caratteristica che determina una diversa percezione della sostenibilità (Kafková, 2019) e per questo motivo deve essere attentamente studiata (Haddouche & Salomone, 2018). Il filone di studi denominato "Generational theory" (Strauss & Howe, 1997) afferma infatti che la sensibilità verso il tema ambientale varia per gruppi di consumatori di diverse generazioni (Li et al., 2013). In particolare, la Generazione Z (nata fra il 1996 e il 2015) risulta diversa dalle altre in merito a vari aspetti del proprio comportamento (Prayag et al. 2022; Seyfi et al. 2023; Sharma et al., 2023). In merito alla sostenibilità, questa generazione è disposta a pagare un premium price per l'acquisto di prodotti sostenibili (Deloitte, 2022), mostra più facilità nell'adozione di pratiche sostenibili (Dabija et al., 2020; Prayag et al. 2022) e, in tema di viaggi, ha interesse ad interagire con la comunità locale e sceglie, più di altre generazioni, servizi alberghieri eco-friendly (Booking, 2019, Ribeiro et al. 2023). Nonostante l'interesse per la sostenibilità mostrato da questa generazione, vari studi rilevano come la sensibilità verso questo attributo spesso non si traduca in vere e proprie pratiche sostenibili (D'Acunto e Filieri, 2021; Parzonko et al., 2021; Giachino et al., 2022; Pinho & Gomes, 2023). Visti i risultati talvolta in contrapposizione della letteratura, risulta interessante approfondire ulteriormente il tema focalizzando lo studio sulla percezione della sostenibilità della generazione Z al fine di comprendere la loro reale propensione verso le pratiche sostenibili.*

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Il paper, inoltre, si propone di contribuire agli studi sul comportamento di acquisto del turista indagando gli attributi considerati durante la scelta del servizio alberghiero. Gli attributi principalmente considerati dai viaggiatori durante la scelta sono la pulizia e la location (Dobnicar and Otter, 2003), il prezzo (Lockyer, 2005) e il rapporto qualità/prezzo (Caber and Albayrak, 2014). Alcuni studi più recenti individuano anche il ruolo della sostenibilità come driver di scelta insieme agli attributi precedentemente citati (Bohdanowicz 2005; Lee et al. 2010; Han et al. 2011; Millar and Baloglu 2011; Verma and Chandra, 2018) seppur con particolare riferimento alla dimensione ambientale (Franco et al. 2021). La dimensione sociale e quella della sostenibilità sono considerate solo da alcuni studi (Noonan and Rizzo, 2017; Tölkes, 2018, Franco et al. 2021). In questo filone di ricerca, alcuni autori si concentrano sul comportamento di acquisto dei viaggiatori appartenenti alla generazione Z cercando di individuare l'importanza attribuita alla sostenibilità in vari settori come quello dei trasporti (D'Arco et al., 2023) oppure in specifiche aree geografiche (Prayag et al., 2022). Alcuni studi analizzano la fedeltà nei confronti dei brand green (Rasheed and Balakrishnan, 2023). Infine, i risultati dello studio di Wee (2019) mostrano come la generazione Z sia particolarmente attenta ai valori sociali ed ambientali legati alla sostenibilità nelle proprie pratiche sostenibili.

Una ulteriore variabile demografica che viene spesso presa in considerazione negli studi sugli effetti della sostenibilità sul comportamento di acquisto del consumatore è il genere (Bencsik et al., 2014; Sahin et al., 2012 e Meizen-Dick et al., 2014). Mantenendo il focus sulla generazione Z, Zhao et al., (2021) sostengono che sono presenti numerose differenze in termini di atteggiamento tra uomini e donne, e quest'ultime in particolare, pongono una attenzione maggiore al consumo di prodotti green e sono più attente all'ambiente (Dragolea et al., 2023). Per quanto riguarda il turismo e l'ospitalità vari autori evidenziano la rilevanza della sostenibilità nella scelta del servizio alberghiero e una generale maggiore responsabilità nei confronti dell'ambiente, rispetto agli uomini (Han et al., 2011 e Wang et al., 2018). Al contrario esistono studi come quello di Kang et al., 2012 che giungono alla conclusione opposta o, come Sevilla-Sevilla (2019) ad una conclusione neutra dove il genere non sembra essere una componente rilevante. Pertanto, al riguardo, il dibattito in letteratura è molto ampio ed i risultati non sono volti ad un fronte o all'altro.

Purpose of the paper. *Con riferimento al framework concettuale precedentemente esposto, il paper si propone di indagare la percezione della sostenibilità nelle sue varie dimensioni per la generazione Z, verificando anche un eventuale effetto legato al genere. Nell'ambito degli studi relativi ai driver della scelta del servizio alberghiero non viene affrontato nello specifico il tema della percezione delle sostenibilità, soprattutto nelle sue tre dimensioni (social e d economica oltre che ambientale), legato a una specifica generazione. Il paper si propone quindi di contribuire alla letteratura esistente ponendosi le seguenti domande di ricerca: RQ1. La generazione Z considera importante la sostenibilità nella scelta del servizio alberghiero? RQ2. Quali dimensioni della sostenibilità (ambientale, economica e sociale) sono ritenute più importanti dai viaggiatori appartenenti alla generazione Z?*

Con riferimento all'effetto del genere nella percezione della sostenibilità della Generazione Z, lo studio si propone di rispondere alla seguente domanda di ricerca: RQ3. I viaggiatori della generazione Z mostrano una differenza nella percezione della sostenibilità nella scelta del servizio alberghiero in base al genere?

Methodology. *L'indagine è stata condotta nel periodo di maggio 2023 attraverso un questionario online rivolto a un gruppo di studenti universitari ed è stato raccolto un campione di oltre 600 risposte. La scelta dell'ambiente universitario ha permesso di intercettare rispondenti appartenenti alla generazione Z, visto il focus dello studio che si concentra sulle caratteristiche e i comportamenti turistici di questa generazione. Il questionario è composto tre sezioni. La prima dedicata all'analisi delle caratteristiche sociodemografiche dei partecipanti mira a delineare il profilo dei rispondenti. La seconda parte del questionario è focalizzata sulle variabili comportamentali legate al turismo, offrendo una visione approfondita delle abitudini di acquisto dei servizi, della frequenza delle prenotazioni e delle motivazioni che guidano i viaggi. La terza sezione, concentrata sugli attributi considerati nel processo decisionale per la scelta alberghiera, offre una prospettiva sugli aspetti sostenibili del soggiorno. La riflessione sulle aspettative riguardanti le pratiche sostenibili adottate dalle strutture ricettive risulta particolarmente rilevante, poiché è la base per comprendere la rilevanza della sostenibilità per il campione coinvolto. L'approccio metodologico nella selezione delle domande e degli attributi è stato integrato attraverso una revisione della letteratura, al fine di identificare correttamente gli aspetti menzionati nel paragrafo precedente. Passando alla parte metodologica, sono state utilizzate sia la statistica descrittiva che la statistica inferenziale al fine di avere un approccio completo e approfondito nella comprensione delle dinamiche emerse (Kaur, Stoltzfus, Yellapu, 2018). L'utilizzo di test d'ipotesi (nello specifico il Mann- U Test, poiché i dati erano distribuiti in modo non-normale) (MacFarland, Yates, 2016) è stata la base per esplorare le differenze di genere e autovalutazione di sostenibilità che sono legate alla successiva interpretazione delle differenti risposte emerse tra i sotto-campioni a disposizione.*

Results. *Il campione considerato nell'indagine è formato da 637 partecipanti, di cui 432 sono donne, 201 uomini e 4 non hanno dichiarato il proprio genere. Tutti i partecipanti, come già affermato, appartengono alla Generazione Z, con un'età media di 24 anni, un dato che rimane costante sia per le donne che per gli uomini. Nel contesto professionale, il campione presenta una suddivisione tra 150 lavoratori e 481 studenti, con percentuali di genere molto simili. Il titolo di studio prevalente è il diploma, seguito dalla laurea, questi due aspetti, complessivamente, rappresentano l'84% degli uomini e il 91% delle donne. Inoltre, per concludere la descrizione sociodemografica del campione, solo 3 partecipanti dichiarano di avere figli, mentre altri 3 affermano di essere sposati ed infine, è interessante notare che il 70% delle donne e il 75% degli uomini si dichiarano single. Spostando l'attenzione sul reperimento di informazioni, legate alla scelta di strutture ricettive, per tutti i partecipanti, l'indagine rivela che i portali e i siti internet rappresentano le due principali fonti di informazione senza differenze significative tra i generi. Considerando le preferenze di viaggio, dai risultati emersi si evince che la maggioranza degli intervistati preferisce viaggiare in compagnia, con il 35% degli uomini e il 34% delle*

donne che prediligono la compagnia degli amici. Seguono da vicino coloro che scelgono di trascorrere le proprie vacanze con il partner (33% degli uomini; 31% delle donne). La famiglia rappresenta una scelta significativa per il 21% degli uomini e il 27% delle donne. Da notare che esiste anche una percentuale, seppur minore, di individui che apprezzano l'esperienza del viaggio solitario, con il 9% degli uomini e il 6% delle donne che prediligono l'autonomia nell'esplorare nuovi luoghi. Curiosamente, non emergono notevoli differenze di preferenze in base al genere quando si tratta di selezionare la compagnia di viaggio, evidenziando un'omogeneità nelle scelte della Generazione Z in questo contesto. Inoltre, analizzando le motivazioni per le quali si è deciso di svolgere una vacanza in una struttura ricettiva, emerge un chiaro trend in termini di preferenze. Le risposte più ricorrenti, distinte per genere, sono rappresentate da "Divertimento/Svago" (65% donne; 68% uomini) e "Relax/Benessere" (52% donne; 50% uomini). Proseguendo con l'analisi della percezione della sostenibilità, ai partecipanti è stata posta la domanda se prestino attenzione alla sostenibilità nella scelta di una struttura alberghiera. Come si evince da Tabella 1, si ha una prevalenza di soggetti, che si definiscono sostenibili nella componente femminile. In quella maschile prevalgono i non sostenibili (55%).

Tab. 1: Attenzione per la sostenibilità: rispondenti per genere e sostenibilità

Genere	Sostenibili		Non Sostenibili		Totali
Uomini	91	45,27%	110	54,73%	201
Donne	222	51,39%	210	48,61%	432

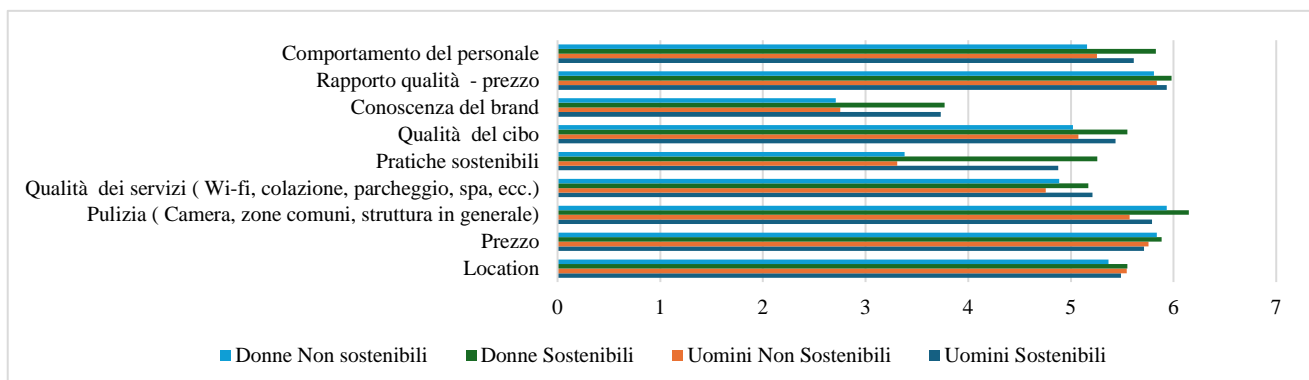
Riguardo la tipologia di strutture ricettiva utilizzata, l'hotel è la scelta principale, affermata dal 41% del campione, seguito da appartamenti e B&B. Importante sottolineare che, anche dividendo il campione per la sostenibilità e genere, non emergono differenze significative. Gli utenti, sia sostenibili che non, utilizzano con percentuali quasi identiche, le stesse tipologie di strutture del mondo dell'ospitalità (Albergo, circa 40%, seguito da appartamenti 35-37% e B&B 16%). In conclusione, è possibile affermare che, descrittivamente, non emergono differenze significative né di genere né di sostenibilità all'interno del campione. Gli utenti della generazione Z mostrano abitudini e preferenze turistiche che non differiscono molto tra di loro in questo campo.

Nella fase successiva dell'analisi, si utilizzano strumenti di statistica inferenziale per valutare due aspetti correlati alla generazione Z in questo campo. Il primo aspetto riguarda la rilevanza degli attributi nell'ospitalità alberghiera. Dai risultati emerge una considerazione moderata della sostenibilità nella scelta alberghiera (punteggio medio di 4.20). In ogni caso, in comparazione con gli attributi di base (come, ad esempio rapporto qualità prezzo che ottiene 5.89 e Pulizia con 5.86), la sostenibilità è valutata in modo lievemente inferiore. Infine, dividendo il campione tra sostenibili e non sostenibili si evince come facilmente intuibile una maggiore importanza attribuita dalla prima categoria (sostenibili 5.26 e non sostenibili 3.38).

Al fine di comprendere se siano presenti differenze significative in base al genere e al profilo di sostenibilità, si procede all'analisi delle differenze, verificando se i criteri di valutazione degli attributi dell'ospitalità alberghiera mostrino disparità significative tra i generi e tra chi si dichiara sostenibile o meno. Questa prima fase di analisi mira a fornire una prospettiva più approfondita e dettagliata sulle preferenze e sulle attitudini della generazione Z in merito agli attributi delle strutture alberghiere. Successivamente, si estende l'indagine alle tre dimensioni della sostenibilità, mantenendo lo stesso approccio basato sul genere e sul profilo di sostenibilità. Questo ulteriore step consentirà di valutare se vi siano differenze statisticamente significative tra i gruppi, offrendo una visione più articolata sulle percezioni e sui comportamenti della generazione Z in relazione alla sostenibilità nelle strutture alberghiere. L'obiettivo finale, come già ribadito nei paragrafi precedenti, è fornire una panoramica approfondita, supportata da analisi statistiche robuste, sulla relazione tra la generazione Z, la sostenibilità e le preferenze attribuite all'ospitalità alberghiera.

Nella Figura 1 sono presenti i risultati relativi alla valutazione dell'importanza, tramite una scala Likert (valori da 1 a 7), degli attributi legati all'ospitalità alberghiera.

Fig. 1: Attributi della scelta del servizio alberghiero



Dal grafico emerge chiaramente che vi è una valutazione media più elevata per i soggetti che si autodefiniscono sostenibili nella scelta dell'hotel. Ci sono aspetti interessanti da notare: il brand è chiaramente considerato più importante dalle rispondenti femminili. Inoltre, emerge chiaramente che le pratiche sostenibili attuate dall'hotel sono ritenute molto più importanti da coloro che si sono auto-definiti consumatori attenti alla sostenibilità nella scelta alberghiera. In una prospettiva generale, sono però gli attributi di base (qualità/prezzo, prezzo e pulizia) a ricevere le valutazioni più elevate da parte delle quattro categorie.

In seguito, è stata intrapresa una analisi per esplorare se le quattro categorie di individui presentassero percezioni diverse riguardo alle tre dimensioni della sostenibilità (RQ2). Inoltre, è stata considerata fin da subito la differenza di genere in modo da rispondere alla domanda di ricerca 3 (RQ3). È importante sottolineare che le tre dimensioni della sostenibilità sono state inquadrare all'interno del questionario attraverso una serie di attributi e domande. Da un punto di vista meramente statistico, date le evidenze di non normalità dei dati, confermate tramite il test di Shapiro-Wilk, si è deciso di adottare il test di Mann-Whitney U per l'analisi tra le categorie. Nella seguente tabella 2 sono presenti i risultati dei test, svolti per genere e autodichiarazione di sostenibilità.

Tab. 2: Test d'Ipotesi

Uomini Sostenibili Vs Uomini non sostenibili		
Dimensioni	U Value	P-Value
Sociale	U Value = 4256	0.09
Economica	U Value = 4258	0.09
Ambientale	U Value = 3855	0.007
Uomini sostenibili Vs Donne Sostenibili		
Dimensioni	U Value	P-Value
Sociale	U Value = 8118.5	0.009
Economica	U Value = 8508.5	0.04
Ambientale	U Value = 8049.5	0.007
Donne sostenibili Vs Donne non Sostenibili		
Dimensioni	U Value	P-Value
Sociale	U Value = 17306	< 0.0001
Economica	U Value = 17694	< 0.0001
Ambientale	U Value = 16397.5	< 0.0001
Uomini non sostenibili vs Donne non sostenibili		
Dimensioni	U Value	P-Value
Sociale	U Value = 10515	0.18
Economica	U Value = 10440.5	0.15
Ambientale	U Value = 10023	0.05

Dal test di Mann-Whitney U emergono risultati molto interessanti. Infatti, considerando uomini e donne sostenibili rispetto a non sostenibili della generazione Z, si osservano risultati divergenti. Gli uomini sostenibili valutano la dimensione sociale ed economica in modo praticamente identico agli uomini non sostenibili, mentre la valutazione della dimensione ambientale è statisticamente differente. Per le donne, invece, si registrano risposte statisticamente significative tra le due categorie e le dimensioni sono valutate in modo differente, ed in modo più elevato, dalle rispondenti che si sono auto dichiarate sostenibili nella scelta alberghiera.

Focalizzandoci sulle potenziali differenze di genere, sono stati svolti test sulle tre dimensioni della sostenibilità, tra uomini e donne sostenibili e non sostenibili. Dai risultati emersi, si nota una differenza significativa per tutte le dimensioni tra gli individui sostenibili, con un'apprezzabile rilevanza a favore delle donne, che valutano in modo differente e più elevato le tre dimensioni. Passando, invece, ai non sostenibili si rileva una non significatività per le dimensioni sociale ed economica e una debolissima significatività ambientale, sempre a favore del genere femminile. Di conseguenza, è possibile affermare che il genere rappresenti un aspetto molto rilevante in queste valutazioni, non generando un risultato univoco ma evidenziando percezioni differenti. In conclusione, è possibile affermare che il genere rappresenta una variabile importante nella percezione della sostenibilità (RQ3). Le donne che si auto-dichiarano sostenibili tendono a valutare con punteggi in media più elevati l'importanza degli attributi di scelta del servizio alberghiero rispetto agli uomini, d'altra parte, non manifestano grandi differenze tra sostenibili e non sostenibili. Al contrario, la parte del campione che si è autodefinita non sostenibile valuta le dimensioni tutte allo stesso modo siano essi uomini o donne. In merito alle dimensioni della sostenibilità ritenute più importanti dalla generazione Z (RQ2), si trova una prevalenza delle dimensioni Ambientale (5.34) e Sociale (5.33) con un lieve distacco per quella economica (5.09). Passando ad un'analisi delle dimensioni attraverso il genere, emerge la maggiore rilevanza dai punteggi femminili rispetto a quelli maschili e si ha lo stesso ordine di priorità del campione complessivo. Possiamo quindi concludere che la generazione Z percepisca in generale il ruolo della sostenibilità nella scelta del servizio alberghiero confermando i precedenti studi di Bohdanowicz (2005), Lee et al. (2010), Han et al. (2011), Millar and Baloglu (2011) and Verma and Chandra (2018). Tuttavia, la sostenibilità non risulta di certo quello più importante rispetto invece alla pulizia, al prezzo e al rapporto qualità/prezzo confermando in tal senso i precedenti studi di Dolicar and Otter (2003), Lockyer (2005) and Caber and Albayrak (2014).

Si nota per il genere femminile della generazione Z una particolare attenzione al brand che non era emersa in precedenti studi. Se però si considerano i precedenti studi su sostenibilità e generazione Z si nota come i forti valori e la forte attenzione nei confronti della sostenibilità non si traducano in effettive pratiche sostenibili. Questo risultato conferma gli studi di D'Acunto e Filieri, 2021; Parzonko et al., 2021; Giachino et al., 2022; Pinho & Gomes, 2023. Lo studio inoltre conferma un interesse maggiore nei confronti della sostenibilità del genere femminile confermando gli studi di Dragolea et al., 2023 anche considerando la scelta del servizio alberghiero (Han et al., 2011 e Wang et al., 2018).

Research limitations. I limiti di questa ricerca, focalizzata sulle pratiche sostenibili degli hotel e sull'importanza attribuita dai turisti, sono evidenti data la sua natura preliminare. Un aspetto rilevante è il focus sulla Generazione Z, che impedisce generalizzazioni su tutte le categorie di consumatori. La comprensione del concetto di sostenibilità, infatti, può variare tra generazioni, e l'estensione di tali conclusioni potrebbe richiedere indagini più ampie su altre fasce di età. Inoltre, lo studio si riferisce a giovani italiani e con un elevato grado di scolarizzazione (studenti universitari). Non si considera quella parte dei giovani che lavorano e che potrebbero presentare diversi approcci alla sostenibilità. Questi aspetti potranno essere superati proseguendo l'indagine ed estendendo il campione ad altre fasce di età, nazionalità e motivazioni di viaggio.

Managerial implications. I risultati del presente studio presentano utili implicazioni manageriali per i manager delle imprese alberghiere e dell'ospitalità. Comprendere la percezione e il ruolo del fattore "sostenibilità" nelle scelte di acquisto della clientela risulta di particolare importanza per sviluppare appropriati servizi e adeguate strategie di management e di comunicazione. In particolare, comprendere le peculiarità della generazione Z, che risulta una parte importante della clientela nel business turistico, è estremamente utile anche nelle sue differenti variabili di genere. Inoltre, tali aspetti si dimostrano utile anche per gli altri attori del settore turistico quali i trasporti, la ristorazione e i policy maker nella definizione delle proprie politiche di sviluppo.

Originality of the paper. Lo studio esamina il ruolo della sostenibilità nelle scelte del servizio alberghiero della generazione Z. Rispetto ad altri studi, i risultati raggiunti contribuiscono alla letteratura sul tema esplorando un fattore ancora poco preso in considerazione: la sostenibilità, considerata nelle sue tre dimensioni (ambientale, economica e sociale) e non come spesso accade esclusivamente nella sua dimensione ambientale. Inoltre, non sono molti gli studi che cercano di comprendere le dinamiche di scelta del servizio alberghiero sulla base della generazione e del genere. Per queste ragioni lo studio offre una preziosa interpretazione dei fattori alla base del comportamento d'acquisto dei consumatori della generazione Z offrendo anche vari spunti di riflessione.

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Data-driven Strategic Process in the Hospitality Industry: Studying Hotel consumers' purchase intention through web analytics.

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Abstract

This study investigates the transformative impact of data-driven strategies on the hospitality industry, with a specific emphasis on the utilization of big data for measuring consumer purchase intention. Through the utilization of big data, hospitality firms may depict detailed customer profiles, forecast demand patterns, and enhance service quality, thereby optimizing resource allocation and sustaining competitiveness. This research particularly examines the relationships among trust, brand orientation, and engagement attitude concerning online purchase intention among hotel consumers, employing Partial Least Square Structural Equation Modeling (PLS-SEM) on web analytics data. Leveraging web analytics tools such as Google Analytics enables firms to quantify customer purchase intention and subsequently acquire insights to enhance the efficiency and effectiveness of their strategic decision-making processes. Although the primary focus of this study is on the hospitality industry, its findings bear relevance for other industries as well. Indeed, in the contemporary complex environment characterized by pervasive Internet usage, an increasing number of firms operating in various industries are increasingly challenged to develop data-driven strategies to reach, maintain and renew their competitive advantages.

Key words: Google Analytics, PLS-SEM, Hospitality Management, Consumer Behaviour

Framing of the research. *This research delves into the transformative impact of data-driven strategies on the hospitality industry, with a focus on utilizing big data to gauge consumer purchase intention.*

Extant research highlighted the complex interdependencies within the tourism industry, which led to the emergence of both competitive challenges and collaborative opportunities, especially in destination management and marketing contexts. At the same time, several scholars underscore the tourism industry's role as an economic catalyst, influencing GDP, employment rates, and investment attractiveness.

Accordingly in recent years, there has been a significant surge in strategic management scholarly interest within the hospitality and tourism industry with particular emphasis on critical issues such as environmental uncertainty and strategic decision-making.

"Smart" firms (Buhalis, 2019) leverage interconnected technologies to innovate processes and maximize stakeholder value. In this context records of data play a crucial role in enhancing service customization and consumer engagement, thereby fostering brand loyalty. By harnessing information from various sources, firms in the hospitality industry can create detailed customer profiles, anticipate demand trends, and enhance service quality (Ghalekhondabi et al., 2019).

According to Kaur (2021), web analytics, notably Google Analytics, are viewed as essential tools for understanding customer behaviours and improving website performance. These tools facilitate the creation of personalized user experience and enhance brand loyalty.

This study aims to illustrate how the utilisation of web analytics data can help firms in measuring customer purchase intention. By doing so, firms make their strategic decision-making processes more efficient and effective.

Purpose of the paper. *Personalized marketing is crucial for firms seeking to engage and retain customers, particularly in the hospitality industry. By harnessing big data, and gaining insight into customer preferences and behaviours, hotels, airlines, and destinations can tailor targeted communication and advertising that resonates with their audience (Mnyakin, 2023).*

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Duan et al. (2019) argue that big data and artificial intelligence (from now on AI) can significantly enhance organizational learning and decision-making effectiveness. With the increasing influence of big data and AI, firms are using predictive analytics to optimize sales, develop advertising campaigns, and personalize marketing messages. This technology enables businesses to identify target consumers, predict their reactions to marketing efforts, and improve overall service quality by understanding the reasons for product popularity among consumers.

An increasing number of scholars (Cantoni et al., 2011) have drawn their attention to scrutinizing hotel online purchase intention. Critical antecedent of purchase intention are considered information quality, website quality, perceived price, brand and trust (Law and Hsu, 2005; Rong, et al., 2009)

The process of consumer purchasing is affected by a multitude of factors, encompassing personal, psychological, social, and cultural aspects. Social factors, like group dynamics and social status, can influence consumer responses, while personal factors such as age and economic situations also play a significant role. Additionally, psychological factors, like motivation and perception, impact the consumer's decision-making process (Duffett, 2015).

In this context, the firm's brand positioning and awareness play a relevant role.

A brand is the unique identification of products or services offered to consumers, distinguished by factors such as name, symbol, or packaging design. Brand orientation is a strategic direction for achieving company goals, prioritizing customer satisfaction and growth. Well-managed brands can enhance customer satisfaction and value influencing buyer decisions and repurchase intentions. Brand awareness, a key indicator, involves consumer recognition and recall of brands within product categories. Previous research has established a positive relationship between brand orientation and financial performance (Ciunova-Shuleska et al., 2017) emphasizing the strategic role of brands in business success. Brand orientation involves aligning product development with brand advantages to achieve sustainable growth. Despite its introduction over two decades ago, brand orientation remains an emerging concept in brand management, influencing customers' online purchase intentions (Baumgarth et al., 2013).

H1: Brand orientation (BO) affect customers' online purchase intentions (PI)

Trust is fundamental in the online shopping model, rooted in consumer trustworthiness, security, and privacy. Various interpretations of trust exist, emphasizing its contextual sensitivity and the presence of vulnerability. Perceived trust is crucial in e-commerce, shaping consumer behaviour due to limited face-to-face interaction. In online shopping, trust is consumers' willingness to depend on others' actions, hoping for acceptable practices and promised products. It encompasses perceptions of retailers' ability, kindness, and honesty, mitigating uncertainties and psychological concerns about online transactions. Establishing online trust is crucial for long-term customer relationships and positive word-of-mouth, impacting purchasing decisions. However, trust issues persist, particularly regarding seller reliability and process security, deterring some customers from online shopping (Aziz et al., 2018). Trust plays a vital role in the hospitality industry as well, influencing consumers' confidence in online platforms and their reservations.

H2: Trust (TRUST) is a critical determinant of the purchase intentions (PI)

Consumers are more likely to engage in online purchase behaviour when they perceive online merchants as trustworthy, and feel confident about the online transactions process (Liu and Zhang, 2014). Online merchants should focus on having a long-term relationship with their customers by delivering trust and transparency. In e-commerce, customer relationships are pivotal for fostering repeat purchases and brand loyalty. Research by Chiu et al. (2009) highlights the significant impact of trust, ease of use, usefulness, and enjoyment from previous experiences on customers' repurchase intentions. Additionally, Khalifa and Liu (2007) emphasize the influence of factors such as after-sale service, transaction efficiency, security, convenience, and cost savings on repurchase intention.

Moreover, loyalty programs play a vital role in customer retention strategies, as Vinod (2011) suggests that it costs three times more to acquire a new customer than to retain an existing one. Tangible benefits from loyalty programs and emotional attachment to brands can drive customer purchases (Tanford et al., 2011), while customer dissatisfaction with website experiences can lead to negative reactions (Rheem, 2010).

Furthermore, the quality of products and services significantly impacts purchase intentions. Consumers, especially those who are quality-oriented, prioritize product excellence and expect online retailers to provide accurate information (Ling et al., 2010).

H3: Consumers tend to engage (Engagement) if they perceive the relationship as trustworthy (TRUST)

H4: Engagement affect the purchase intentions (PI)

We can therefore define brand trust as the feeling of security held by the consumer in his/her interaction with the brand, it is based on the perception that the brand is reliable and responsible for the interests and welfare of the consumer.

Scenario attitude is the consumer's mental simulation of the anticipated experience based on available information. It is influenced by perceived trustworthiness, brand orientation, and fear of uncertainty (Isa et al., 2020). Recognizing and addressing these factors can significantly impact consumers' online purchase intentions in the hotel booking context. This mental simulation can encompass various aspects, including the quality of the accommodation, amenities, location, and the overall experience they anticipate having during their stay.

H5: Scenario Attitude (SA) is affected by TRUST and BO

It is interesting to note that, fear of uncertainty can negatively influence scenario attitude (Isa et al., 2020). If consumers have concerns or doubts about the accuracy or reliability of the information provided, they may have more negative anticipations about their upcoming stay.

An examination of previous studies (Coleman et al., 2017) highlights that the fear of uncertainty and scenario attitude are two opposite latent factors that we can measure due to their relationship with brand orientation and trust and ultimately supporting the measurement of online purchase intention. Moreover, brand orientation and trust are closely related, when customers trust the e-vendor, they are more inclined to book directly through the website (Polites et al., 2012).

H6: Scenario Attitude (SA) influences Purchase Intention (PI)

Methodology. In our research, we chose to apply Partial Least Squares Structural Equation Model (PLS-SEM), which uses a composite-based approach (Jöreskog and Wold, 1982). PLS-SEM is considered efficient for small sample sizes and complex models, making no distributional assumptions and is widely used in the hospitality and tourism industry research.

Path models are visual representations used in structural equation modelling (SEM) to illustrate hypotheses and variable relationships. Constructs (latent variables) are depicted as hexagons, while indicators (manifest variables) are shown as rectangles; arrows represent relationships between constructs and indicators, with single-headed arrows denoting predictive or causal relationships in PLS-SEM (this representation is used to depict our model explained in the next session). A PLS path model comprises a structural (inner) model linking constructs and displaying relationships and measurement models (outer models) illustrating relationships between constructs and indicators. Error terms are associated with constructs and reflectively measured indicators, representing unexplained variance.

In hospitality and tourism research, the use of this model appears to be standard practice, because of many reasons, such as the dimension of the sample, and its different approaches: confirmatory, explanatory, predictive, descriptive, and exploratory, thus being more versatile than others (Ali et al, 2018).

Our estimation model treats the collected information as constructs to estimate latent variables related to guest buying activity. This approach differs from previous studies (Rosenman, Tennekoon, & Hill, 2011) that have relied on survey questionnaires to gauge consumer engagement, referring concerns over accuracy and response bias. Our research, instead, follows those scholars (Liu, Shin, & Burns, 2019) that have increasingly turned to analysing consumer engagement through behavioural data collected from the web and social media platforms as an alternative method.

Data were collected on Google Analytics G4 from a hotel in Palermo city centre, focusing on six months (July, 1, 2023 and December, 31, 2023) of web traffic on a daily bases from various sources, providing insights into the behaviour of approximately 145,000 visitors, with 57.7% being female and primarily from Europe, the United States, and other global regions (Fig.1).

In addition to web analytics data (Table 1), our estimation of scenario attitude incorporated metrics like the number of directly booked nights and the average booking window. The dataset comprised 888 observations and 10 items detailed in Table 2. To apply the model, we transformed data into a Likert scale from 1 (low visits or time) to 9 (high visits and time spent) (Xun, 2015), and we used the *SeminR* package in R Studio.

Fig. 1 - Gender and countries of origin of the visits



Table 1. Principle measures of touch points

Measure	Description
Visitors	Number of active users
Sessions	Number of sessions started on the website
Sessions with engagement	Number of sessions that last more than 10 seconds, generate a conversion event or register two or more visualizations of a page or screen.
Average time of engagement	Duration of engagement per user per session
Sessions with engagement per users	Number of sessions with engagement per user
Event per session	The average number of events per session
Engagement rate	Percentage of sessions with engagement
Number of events	Number of times in which users activate an event
Conversion	Number of times in which users activate a conversion event
Revenue	The sum of revenues from purchases, subscriptions, and advertising

Table 2: Indicators of the formatively measured constructs

Brand Orientation (BO)	
Bo_1	Visitors
Bo_2	Sessions
Bo_3	Sessions with engagement
Bo_4	Numbers of events
Engagement (Engagement)	
En_1	Average duration of the engagement
En_2	Sessions with engagement per visitor
En_3	Event per session
Trust (TRUST)	
Tr_1	Engagement rate
Scenario Attitude (SA)	
Tr_3	Total number of reserved nights
Tr_4	Average booking window.

The model that we have estimated was as follow:

$$PI = \beta_E Engagement + \beta_{SA} SA + w_{BO} BO + w_{Tr} TRUST + \varepsilon_{PI},$$

Where:

$$Engagement = \sum_{i=1}^3 \lambda_i^{En} En_i + \beta_{Tr} TRUST + \varepsilon_{En}$$

$$SA = \sum_{i=1}^2 \lambda_i^{SA} Tr_i + \beta_{BO} BO + \beta_{Tr} TRUST + \varepsilon_{SA}$$

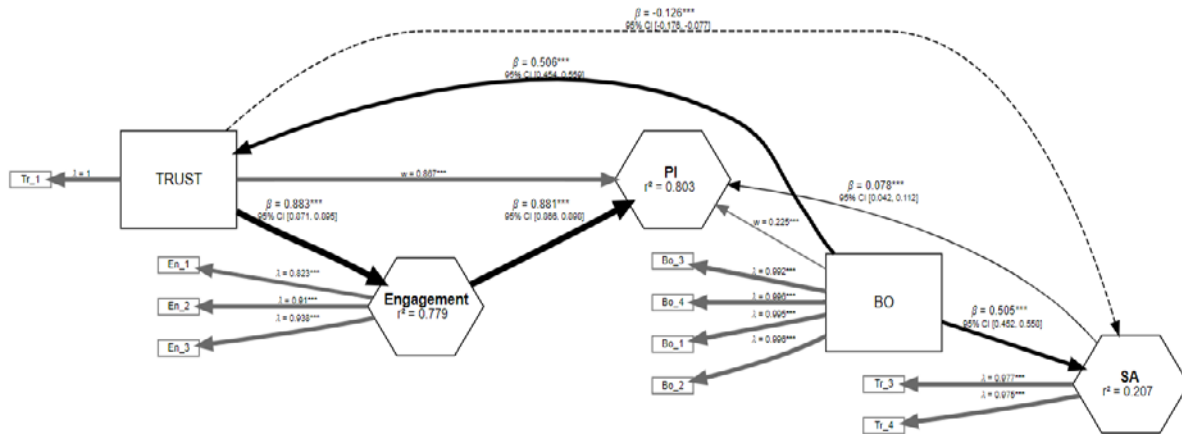
$$BO = \sum_{i=1}^4 \lambda_i^{BO} Bo_i + \beta_{Tr} TRUST + \varepsilon_{BO}$$

$$TRUST = \lambda^{Tr} Tr_1 + \varepsilon_{TRUST}$$

and $\lambda_i^{En}, \lambda_i^{SA}, \lambda_i^{BO}, \lambda^{Tr}$ are the loading factors, $\beta_E, \beta_{SA}, \beta_{Tr}, \beta_{BO}$ are the correlation weights, and w_{BO}, w_{Tr} are the regression weights.

Results. The estimated model (fig.2) shows that TRUST and BO are related positively with customers' PI (confirming H1) with respectively $w_{BO} = 0.225$ and $w_{Tr} = 0.867$, TRUST influences positively customers' Engagement (confirming H3) with $\beta_{Tr} = 0.883$ and the latter has effect on PI (confirming H4) with $\beta_E = 0.881$. In the model, the path coefficients show that SA has influence over PI (confirming H6) even if it shows a poor effect with $\beta_{SA} = 0.028$ and that TRUST is related to SA with $\beta_{Tr} = -0.126$ and to BO with $\beta_{BO} = 0.505$ (H5). The negative effect of TRUST on SA could be intended as the presence of a certain fear about the future in the market but, as we can see from the correlation weight, in any case has a poor impact, for this hotel on the intention of making a reservation.

Fig. 2 – Estimated model



*Hexagons are latent variable, Rectangles are manifest variables, Arrows represent relationships

As far as concerns the model’s explanatory power (Shmueli & Koppius, 2011), R^2 represents the variance explained in each of the endogenous constructs. Our model can explain in a substantial way (Hair, Ringle, & Sarstedt, 2011) PI ($R^2 = 0.803$) and Engagement ($R^2 = 0.779$), while it explicates weakly SA ($R^2 = 0.207$) and TRUST ($R^2 = 0.256$).

In the applied model, all the formative weights (Table 3) are significant at $\alpha = 5\%$ with t-values that are all above 1.960, so far, the bootstrapped loadings (Table 4) are clearly above 2.576, suggesting that all indicator loadings are significant at a level of $\alpha = 1\%$ and showing that we acted in the right way considering all of them in the formatively constructed.

Table 3 – Formative weights

	Original Est.	Bootstrap Mean	Bootstrap SD	T Stat.	2.5% CI	97.5% CI
Tr_1 -> TRUST	1.000	1.000	0.000	.	1.000	1.000
Bo_1 -> BO	0.247	0.247	0.001	174.302	0.244	0.250
Bo_2 -> BO	0.248	0.248	0.001	216.459	0.246	0.250
Bo_3 -> BO	0.258	0.258	0.002	114.163	0.254	0.263
Bo_4 -> BO	0.252	0.252	0.001	240.664	0.250	0.254
Tr_3 -> SA	0.524	0.522	0.007	78.110	0.509	0.534
Tr_4 -> SA	0.501	0.501	0.006	85.916	0.490	0.514
En_1 -> Engagement	0.268	0.267	0.008	33.200	0.251	0.281
En_2 -> Engagement	0.466	0.466	0.011	43.400	0.446	0.488
En_3 -> Engagement	0.379	0.380	0.006	66.346	0.370	0.391
BO -> PI	0.225	0.225	0.021	10.942	0.185	0.263
TRUST -> PI	0.867	0.867	0.015	57.732	0.837	0.895

Table 4 – Bootstrapped Loadings

	Original Est.	Bootstrap Mean	Bootstrap SD	T Stat.	2.5% CI	97.5% CI
Tr_1 -> TRUST	1.000	1.000	0.000	.	1.000	1.000
Bo_1 -> BO	0.995	0.995	0.001	1.531.252	0.994	0.996
Bo_2 -> BO	0.996	0.996	0.000	2.040.625	0.995	0.997
Bo_3 -> BO	0.992	0.992	0.001	758.730	0.989	0.994
Bo_4 -> BO	0.996	0.996	0.000	2.412.727	0.995	0.997
Tr_3 -> SA	0.977	0.978	0.005	204.723	0.968	0.987
Tr_4 -> SA	0.975	0.976	0.005	181.908	0.966	0.986
En_1 -> Engagement	0.823	0.821	0.017	47.608	0.789	0.850
En_2 -> Engagement	0.910	0.911	0.006	164.544	0.900	0.921
En_3 -> Engagement	0.938	0.938	0.005	191.728	0.928	0.947
BO -> PI	0.664	0.664	0.026	25.804	0.617	0.713
TRUST -> PI	0.981	0.981	0.004	270.981	0.974	0.987

Furthermore, the model can be considered reliable (Table 5) as a matter of fact that all the measures are higher than their recommended level and even if the Cronbach’s alpha for PI is almost equal to 0.7, we can consider it reliable as stated also by Lee et al (2011).

Table 5 – Reliability

	alpha	rhoC	AVE	rhoA
TRUST	1.000	1.000	1.000	1.000
Engagement	0.874	0.921	0.795	0.930
SA	0.950	0.976	0.953	0.952
BO	0.996	0.997	0.990	0.997
PI	0.673	0.819	0.702	1.000

Research limitations. *This research shows two main weakness and limitations. On one side we have to consider the principal limitations of the model itself and on the other side we have to consider the principal weakness of this industry regarding big data analysis and use.*

The hospitality industry collects everyday a big amount of data that for sure need to be protected, stored and analysed in a way that they can offer a clear and deep knowledge to managers about markets, trends and so on. In such context we cannot forget one of the main weaknesses of the hospitality industry. As stated by many scholars (Hjalager, 2010), the size of many tourism firms (primarily small family business) does not guarantee an easy access to technology and to the analysis of such vast amount of data. Pahus and Sunesen (2022) emphasize that size matter as usually larger companies are more capable of harvesting the full potentials of the information contained within big data. Conversely, small firms often lack the required competencies to strategically work, utilize and leverage this data. Further, as stated by Mariani and Baggio (2022) most of the time scholars predominantly focus on descriptive and exploratory analytics, with less attention given to predictive analytics. This weakness meets one of the main limitation of the model. Because of the complexity of the construct model it was not possible to use it to forecast the future consumers' behaviour, even though PLS-SEM has been introduced as "casual-predictive approach" to SEM (Jöreskog & Wold, 1982) particularly appealing for research in fields that aim to derive recommendations for practice. Further, another limitation of PLS-SEM includes its inability to handle non-recursive models containing causal loops or circular relationships between latent variables.

Managerial implications. *Having the possibility of measuring consumer's purchase intention through the data that customers put on stage, with their daily behaviour in the web, means to develop selling and marketing operations that are not just reactive but rather proactive. Managers have the possibility to adapts their communication strategies and enhance their touch points to significantly reach their target market, increasing their trust and therefore their engagement and their purchase attitude.*

Personalized marketing is a powerful tool that hotels can use to increase customer loyalty, revenue, and differentiate themselves from their competitors. With the help of big data, hotels can analyse customer data to gain insights into customer preferences and purchase behaviour, enabling them to create targeted advertising campaigns that resonate with their customers (Mnyakin, 2023).

Köseoğlu et al. (2018) identified seven factors crucial for strategic decision execution in the hotel industry, including planning, organization structure, implementation process, communication, resistance, motivation, and employee career planning. During crises such as the Covid-19 pandemic, decision-making and strategy implementation become even more challenging, highlighting the relevance for managers to improve strategic processes to be prepared for extreme circumstances.

Köseoglu et al. (2020) found that managers often perceive strategy as limited to planning, with formulation and implementation viewed as complementary practices.

In the contemporary business environment, strategic orientations have gained prominence, emphasizing the dissemination of strategic thinking throughout the organization. Strategic orientation provides broad guidelines for strategy, guiding firms in aligning resources to exploit market opportunities.

Forecasting is indispensable in the hospitality industry for pricing, resource allocation, and service planning (Ghalekhondabi et al., 2019). Managers and entrepreneurs rely on forecasts to anticipate industry trends based on available information and prior expertise. However, forecasting behaviour is subject to influence from new information, leading to updates in beliefs and forecasts over time. Utilizing web analytics to evaluate the customer experience enables managers to adapt resource utilization efficiently and respond to market changes effectively, thereby minimizing waste of resources and enhancing competitiveness.

Originality of the paper. *Our model serves as an example of the kind of information that can be extracted from the big amount of data generate by a hotel on a daily basis. Managers should recognize the value of this knowledge as it is critical for developing strategies, planning future business advancements, and optimising the use of their resources. Furthermore, in a rapidly evolving and competitive industry, knowing the guest's path and her/his level of trust can be crucial for tailoring more customized product and services.*

When discussing smart hospitality⁵, it is critical to consider the firm's extended ecosystem, as hospitality operates within complex networks and value chains, collaborating dynamically with various partners and the broader environment

⁵ Buhalis (2019) defines "smartness" as a transformative revolution driven by innovative technologies, emphasizing optimizing networks and ecosystems for collective agility and value co-creation. It leads to business process reengineering, innovative approaches to value co-creation, and enhanced industry sectors. In hospitality, smartness benefits hotel properties by increasing

(Buhalis and Leung, 2018). Leveraging big data and AI-enabled tools allows revenue and hospitality management to adopt more comprehensive, science-based predictions, incorporating scenario analysis, decision support, and yield management.

The integration of real-time data with voluntarily surrendered or surreptitiously collected preferences allows properties to offer individualized, contextualized services tailored to customer needs, enhancing operational efficiencies by proactively managing resources like staff, energy, and building management through intelligent systems.

Additionally, AI-driven supply chain management can analyse operational data to optimize inventory management, purchasing, and replenishment levels, driving efficiencies. Big data aids in identifying critical contextual information, behaviour patterns, and preferences, facilitating the development of adaptive solutions and profitable operations that meet user requirements (Buhalis and Foerste, 2015).

Smart hospitality has access to various data sources, including guest's data, internal departments, external partners, and local contextual factors. This agility in researching diverse information dynamically encompasses internal business data, customer profiles, destination statistics, location-based data, and social media content (Buhalis and Foerste, 2015).

It is worth noting that while this study primarily focused on the hospitality industry and hotel firms, its findings hold significance for other industries as well. In today's complex environment, characterized by widespread of the Internet usage (websites, social media and so on) industries are increasingly challenged to develop data-driven strategies to reach, maintain and renew their competitive advantages. Deeply understanding and measuring consumers' purchase intention allow firms to proactively respond to market needs, by anticipating needs and behaviours. Identifying "the right customer to sell the right product at the right moment" is not just a dictat for the hospitality industry but for any firm that is facing complex environment.

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efficiency, streamlining operations, enhancing customer satisfaction, and improving profitability. This is achieved through access to accurate, real-time data for precise customer targeting and ecosystem insights in sales and marketing.

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Unveiling Museums' Online Reputation. The Case of the Uffizi Galleries

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Abstract

The museum's reputation is a crucial intangible asset that enables it to stand out in a competitive environment by influencing perceived organizational effectiveness and attracting resources. Specifically, reputation impacts the attitudes of potential visitors towards visiting the museum and the perspectives of donors and sponsors towards funding cultural activities.

With the rise of the Internet and the subsequent proliferation of online newspapers, social media, blogs, forums, and information-sharing platforms, the concept of reputation has expanded into the digital realm. Online conversations serve as proxies for public opinion and, consequently, for online reputation. Therefore, analyzing online public discourse can provide essential insights into the community's perceptions of online reputation.

Despite the significance of offline and online reputation for a museum's sustainability, the literature on this topic is still in its early stages. To address this gap, this research presents a preliminary exploration of the literature on museums' reputation with a twofold objective: (1) review the literature debate on reputation and museums' online reputation; (2) construct a framework from the literature review for exploring the online reputation of the Uffizi Galleries, one of the most visited museums in Italy, located in the city of art of Florence.

This research contributes empirically to the literature on museum management, shedding light on the concept of reputation as an intangible capital crucial for a museum's perpetuation of its mission and sustainability. The findings hold implications for museums' communication strategies, emphasizing how increased online visibility through institutional communication can influence their reputation. Finally, it underscores the importance of measuring and managing a museum's reputation for its sustainability, influencing potential visitors' decisions and donors' and sponsors' attitudes towards funding cultural activities.

Key words: reputation; online reputation; museums; Uffizi Galleries; Florence; city of art

Framing of the research. *The concept of reputation is gaining significance across various organizational categories, encompassing firms, nonprofit organizations, and cultural entities, particularly in light of technological advancements, shaping strategies, communication, and decision-making processes. For cultural institutions like museums, reputation assumes importance due to its potential influence on perceived organizational efficacy and resource attraction (Padanyi & Gainer, 2003; Mitchell, 2015). Specifically, the museum's reputation impacts the inclinations of potential visitors to engage with its offerings and influences the decisions of donors and sponsors regarding financial support for cultural endeavors (DiMaggio, 1986; Frey & Meier, 2006; Bennett, 2017; Camarero et al., 2023). Museums are increasingly prioritizing brand and reputation management to cultivate positive associations and differentiate themselves within competitive landscapes. In this context, online communication emerges as a crucial tool for audience engagement, visit planning, donor attraction, and stakeholder relationship building.*

Despite extensive discourse in the literature, a shared definition of reputation remains elusive. One prominent definition in managerial studies characterizes reputation as "a perceptual representation of a company's past action and future prospects that describes the firm's overall appeal to its key constituents when compared to other leading rivals" (Fombrun, 1996, p. 72). This definition, further expanded upon by various scholars, recognizes that reputation can be associated with stable and long-lasting perceptions both from external and internal stakeholders, difficult to manipulate and control by the organization and leading to comparisons with others (Wartick, 2002; Brown et al., 2006; Rhee & Haunschild, 2006; Walker, 2010).

With the advent of the digital revolution, the notion of reputation has extended to encompass the online dimension through terms such as "online reputation", "digital reputation", "web reputation", "social media reputation" and "e-

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reputation” (Cooke et al., 2022). Online reputation pertains to the ‘stakeholders’ perceptions of the organization, communicated via online platforms and social media based on their experiences (Reuber & Fisher, 2011; Diana-Jens and Ruibal, 2015).

In the context of museums, reputation serves as a fundamental element of intangible assets, facilitating differentiation in competitive environments (Solima, 2022). Van Riel (2019) posits that museums can enhance their reputation by emphasizing familiarity, historical significance, and their impact on the reputation of the city and country in which they are located. To bolster familiarity, museums can employ targeted, direct, and dialogical communication strategies. Within this framework, online communication assumes pivotal importance for museums in audience development and stakeholder engagement. Online channels serve as platforms for museums to connect with current and potential visitors, supporters, partners, and so on (Mateos-Rusillo, 2019). This digital dimension of reputation is underscored by stakeholders sharing their museum experiences through online reviews, blogs, and comments, thereby influencing collective perceptions of reputation. Consequently, museums utilize online institutional communication not only to foster audience growth but also to shape stakeholder perceptions regarding their actions and prospects, thus contributing to their reputation. Online presence, coupled with visibility, thus emerges as a key determinant shaping the collective perception of reputation over time.

Purpose of the paper. Although offline and online reputations hold significant importance for museums, research in this domain remains still in its early stages. To address this gap, this research presents a preliminary exploration of the literature on museums’ reputation with a twofold objective: (1) review the literature debate on reputation and museums’ online reputation; (2) construct a framework from the literature review for exploring the online reputation of the Uffizi Galleries, one of the most visited museums in Italy, located in the city of art of Florence. The Uffizi Galleries represent one of the oldest museum complexes in the world and group together the historical art collections of the Medici family. It is a state museum that in 2015 gained special autonomy. It has five museum sites - the Uffizi Gallery, the Drawings and Prints Cabinet and Library, the Palazzo Pitti Museum, the Vasari Corridor, and the Boboli Gardens – located in the UNESCO area of the city of Florence. Since 2016, the Uffizi has been provided by the director with a new department dedicated to IT and Digital Strategies. According to data from the Italian Ministry of Culture, the Uffizi Galleries was the most visited state museum institution in Italy in 2021 and counted the highest number of followers on social media in 2021 and 2022. Adding up all social channels - Facebook, Instagram, Twitter, and TikTok - the ‘Galleries’ followers exceeded one million in December 2022, with an increase of 12.8% compared to 2021 (Il Giornale dell’arte & The Art Newspaper, 2023). Considering these characteristics, recently, it was the object of analyses and research devoted to understanding digital strategies and changes in the organization over time (Lazzeretti et al., 2024; Giusti, 2024). Based on such consideration, the Uffizi Galleries can represent a valuable case study for investigating its online dimension, visibility, image, and ultimately, reputation.

Methodology. The present research focuses on the reputation of the Uffizi Galleries by analyzing the online public discourse using text mining techniques via Python. Based on the definition of reputation and online reputation, the research develops an exploratory analysis for investigating the mental associations that external international audiences have concerning the Uffizi Galleries. The source of data was a highly relevant international newspaper, namely The New York Times.

The newspaper was chosen over other online media channels because it shapes collective and individual perceptions through the priming of existing schematic representations, the development of new representations, the integration with broader schemata or in more general narratives, indirect influence through selective re-telling in social interactions, and is a proxy for public opinions (DiMaggio et al., 2013). Moreover, empirical analyses show that media coverage records and influences public knowledge and can influence organizational reputation (Deephouse, 2000). Finally, in the literature, several contributions analyze The New York Times articles to explore the public perceptions and opinions, specifically regarding the image and reputation perceptions (Dennis, 2002; Shi et al., 2023).

The dataset of articles considered consists of $n=143$ articles published from January 1, 2016, to December 31, 2023, retrieved using the keyword “Uffizi” searched in the articles’ text. The initial date coincides with the starting of the new organizational structure related to the museum’s autonomy, while the final date coincides with the ending of the first director’s mandate. The database was established through web scraping techniques, i.e., “automated extraction of information online” (Luscombe et al., 2022), via Python programming language and, specifically, the Selenium library. Such techniques are used by various disciplines within the social sciences, such as economics (Massimino, 2016; Cavallo, 2018), organization (Braun et al., 2018), policy (Caruana-Galizia & Caruana-Galizia, 2018; Hayes & Scott, 2018) and communication (Possler et al., 2019) for collecting big amounts of data from online sources. For each article, using the data scraping technique, the following information was obtained: the title, the date of publication, the link to the article, and the body of the article.

As the digital text collected counted a large amount of data, automated methods were supposed to be the most useful methodology to analyze it. In particular, text mining techniques can be employed to derive reputation perceptions from textual content (Ghose et al., 2009; Amigó et al., 2013) using different methods (Rodriguez-Vidal et al., 2021). One of the most diffused text mining techniques is topic modelling, which consists of probabilistic models used to automatically discover topics in a corpus of texts in digital format (Blei et al., 2003). What it is possible to get from these algorithms, regardless of the model used, are two outputs: the probability that a word belongs to a certain topic and the probability that this topic emerges from a certain document.

Latent Dirichlet Allocation (LDA) is the most widely used topic modelling technique and allows the exploration of the latent structure of textual corpora. Topics are “latent” because they are not explicitly reported by the text author (Saxton,

2018). The LDA algorithm iterates through the text and records patterns of co-occurrences in an unsupervised manner. It is thus a technique designed to capture novel and emergent ideas and cognitive content in general. This is because they reveal the conceptual relationships in the textual data, as the language used in documents represents their cognitive content (Whorf, 1956).

Firstly, the text (including both the title and the body of the article) was pre-processed using classical text mining techniques procedures to make it analyzable by the computer program. For the text pre-processing phase, the following Python libraries were used: NLTK, Pandas, Scikit-learn and NumPy.

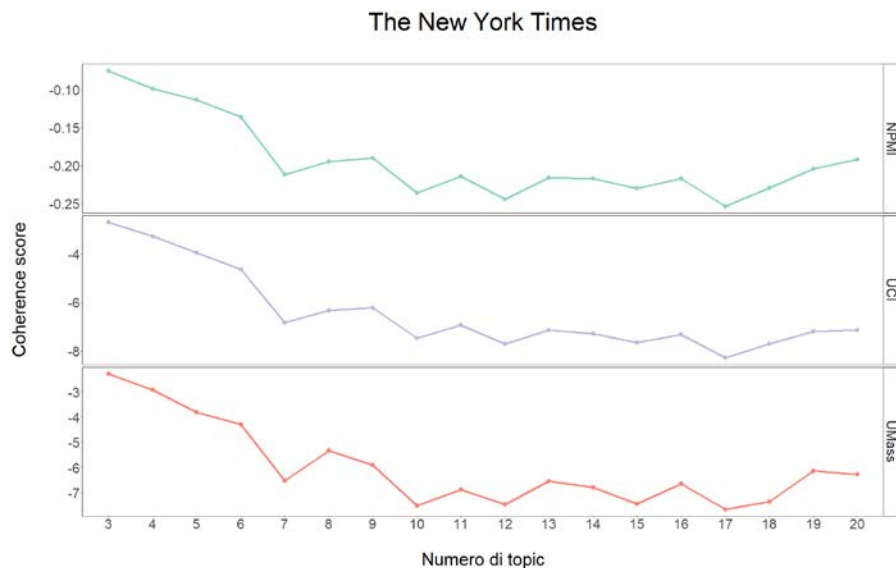
More specifically, the text pre-processing involved the following steps:

- The text was converted to lowercase in order to avoid redundancy;
- Stopwords were removed (words that occur with high frequency but have little semantic content);
- Stemming, or vocabulary reduction, achieved by replacing words (tokens) with their own root (suffix removal);
- special characters, numbers, short tokens (words with one or two characters), and extra whitespace were removed;
- The tf-idf analysis was conducted, which assigns greater weight to words that are important in a specific document but uncommon in the entire document collection (Salton & McGill, 1983). The words with a tf-idf lower than 0.01, a threshold commonly considered significant for analysis, were removed;
- Finally, words tokenization was processed, which consisted of taking the single words as a unit of analysis.

After the pre-processing of the text, the final database was composed of 106 news articles.

Gensim was the library mainly used to conduct the subsequent steps of the analysis. As LDA algorithm is unsupervised, it was necessary to select a number of topics for the algorithm to find. To do that, coherence measures were calculated, which provide the degree of semantic similarity among words with the highest values (in the case of the LDA model, membership probability) in a topic. Thus, they indicate how well those words support the topic to which they belong. The higher the consistency, the more meaningful the topic. These measures have been shown to have a high degree of correlation with manual classifications of words to topics made by human evaluators. The three most used coherence measures were calculated in order to compare their results and select the best one: Normalized Pointwise Mutual Information (NPMI), Pointwise Mutual Information (UCI) and Umass (Röder et al. 2015). We selected 9 topics, as less than 6 topics were considered too limited (Figure 1).

Figure 1. Number of topics and coherence score. Source: authors' elaboration



Then, we applied the LDA algorithm, calculating the “eta” values per word, which represents the probability of each word per each topic.

Since the obtained structure of topics is latent, the algorithm does not automatically label the distribution of topics. Therefore, we proceeded to interpret and label the topics manually (Mohr & Bogdanov, 2013). Finally, to limit the confirmation bias and allow triangulation of the data, the results of the analysis were compared with data and information collected by primary sources – 13 interviews with managers and staff of the Uffizi Galleries and a period of participant observations in the institution – and secondary sources – specifically report on the museum visitors, website and social media.

Preliminary Results. Based on the analysis of the literature and the reputation and online reputation concept, the analysis identified the mental associations that external audiences have of the Uffizi through the identification of the main topics of discussion within The New York Times’s articles.

From the topic modelling analysis, the following topics have emerged: the use of new technologies by the museum complex, the issue of queues to access museum spaces, the case of environmentalist protests in museums, the relationship and comparison with the Louvre in Paris, the Italian State Museums Reform for give autonomy to the Galleries (Riforma

Franceschini), artworks stolen by the Nazis, the restoration function, temporary exhibitions, and the relevance of the museum complex's heritage, famous and representative of Italy. The results can be seen in Table 1.

Table 1. Results of topic modelling on The New York Times dataset..

Topic 1 "Digital Technologies"		Topic 2 "Queues at the entrance"		Topic 3 "Environmental activists"		Topic 4 "Relationship with the Louvre"		Topic 5 "Franceschini Reform"		Topic 6 "Stolen artworks during the war"		Topic 7 "The restoration function"		Topic 8 "Loans of works of art"		Topic 9 "Importance of the museum's collection"	
Word	Eta	Word	Eta	Word	Eta	Word	Eta	Word	Eta	Word	Eta	Word	Eta	Word	Eta	Word	Eta
work	0.016	wait	0.040	protest	0.014	lisa	0.025	italian	0.017	paint	0.021	restor	0.020	botticelli	0.031	paint	0.016
galleri	0.014	tell	0.020	citi	0.014	mona	0.024	cultur	0.016	verrocchio	0.018	art	0.014	draw	0.018	galleri	0.013
artist	0.013	peopl	0.015	london	0.010	art	0.021	director	0.016	artist	0.012	itali	0.014	art	0.018	work	0.012
collect	0.012	king	0.015	sunflow	0.010	galleri	0.015	itali	0.016	german	0.009	artist	0.014	paint	0.016	art	0.012
art	0.012	stori	0.015	itali	0.010	louv	0.014	reform	0.011	germani	0.009	artwork	0.014	schmidt	0.014	itali	0.011
nft	0.011	line	0.010	gogh	0.010	paint	0.014	art	0.011	world	0.009	botticelli	0.007	artist	0.011	famou	0.008
visit	0.009	past	0.010	soup	0.010	think	0.009	michel	0.010	stolen	0.009	galleri	0.007	includ	0.009	restor	0.008
ostiglio	0.009	statu	0.010	van	0.010	visitor	0.009	minist	0.010	design	0.009	renaiss	0.007	work	0.009	women	0.008
world	0.007	walk	0.010	jar	0.010	work	0.008	foreign	0.010	medici	0.009	institut	0.007	figur	0.008	state	0.007
selfi	0.007	watch	0.010	work	0.007	peopl	0.008	ministri	0.009	renaiss	0.009	world	0.007	show	0.008	leonardo	0.007

Source: authors' elaboration

Regarding the first topic, the use of new technologies by the Uffizi, words related to the digitization of the Galleries' art collections have emerged, particularly for the creation and sale of NFTs. Then there is the word "selfi" which is the root of "selfie" related to the use of social media by visitors and the museum complex itself, including in relation to influencers who take photos in front of the artworks. The second topic concerns the queues that form for entry into the Uffizi. The words connected to this are "wait", "line", "people". Other words are linked to a particular article about how the author-journalist skipped the line feeling like a "king" while people "watched" him. The third topic is about environmentalist protests targeting cultural heritage to convey messages against policies that do not help reduce pollution and the destruction of nature. Protests of this kind have occurred both at the Uffizi and other major museums, such as the National Gallery in London, where Van Gogh's "Sunflowers" painting was hit with soup. Words related to this episode are found within the identified topic. The fourth topic concerns conceptual proximity and, thus, the comparison between the Uffizi Galleries and the Louvre. For example, we can find words related to Leonardo's Mona Lisa. The fifth topic is about the Franceschini Reform, the reform carried out by the Italian Government in 2014 for the reorganization of the Italian Ministry of Culture and its affiliated museums. Among these is the Uffizi monumental complex, which has seen a significant reorganization of its structure and a new figure of the director at its head, with significant decision-making autonomy in its management. The sixth topic emerged concerns the theme of artworks stolen from the Uffizi collections by the Nazis during World War II. Director Eike Schmidt indeed fought for the return of a painting that the owning family did not want to return to the museum despite requests from the Italian State. The seventh topic concerns the fundamental function of restoring works from the collection, with reference to those by Botticelli. The eighth topic is about temporary exhibitions, such as the "Botticelli Drawings" exhibition at the Department of Drawings and Prints of the Fine Art Museums of San Francisco, to which the Uffizi lent numerous works. Finally, the ninth topic reflects on the importance of the artworks and paintings of the Uffizi, which are representative of Italian heritage and are famous worldwide.

From a general perspective, preliminary results of the analysis show that the mental associations of external audiences concerning the Uffizi Galleries emerged from the analysis of The New York Times article pertain to several categories. Firstly, some topics that constitute the museum's reputation relate to traditional aspects of museums' management. These topics involve discourse on the valuable collections belonging to the museum, the interest in artwork restoration and specific temporary exhibitions, and the comparison with other important international museums, such as the Louvre. Moreover, some critical aspects emerge related to the visitors' management, especially regarding long waiting times in line to enter the museum. Secondly, other relevant topics closely related to the contemporary role of museums in society emerge, such as the use of digital technologies, the theme of environmental activism and the role of museums, and the impact of war on artworks belonging to all of humanity. The results from the text mining analysis are confirmed by the qualitative analysis, particularly by the content of interviews with managers and staff. As has emerged from interviews, these topics are felt to be central to the museum, which aims to position itself as a stimulator and space for sharing reflections on important social themes through its own collection, which serves as a catalyst.

Research limitations. The research presents several limitations. First, a single newspaper cannot be considered exhaustive in representing the reputation of the Uffizi Galleries and, thus, all perceptions expressed in public discourses. Further research will consider data coming from other newspapers, social media platforms, forums, and review platforms to have a more complete view of the different forms of public discourses and audiences. Moreover, in terms of the chosen methodology, sentiment analysis of the considered texts was not conducted, which could provide information on how the identified themes contribute positively, neutrally, or negatively to the museum's reputation. Future research, in line with what has emerged in the literature on the detection of organizations' online reputations, can address these limitations.

Managerial implications. The museum's online activities and the online public discourse play an important role in constructing the organization's reputation. Reputation can be considered a strategic asset for organizations, even museums, in order to increase their competitive advantage. Measuring and managing a museum's reputation, in fact, may increase potential visitors and influence the donors' and sponsors' attitudes towards funding cultural activities. Monitoring and evaluating online public discourse through newspapers and mass media may constitute a strategy for

identifying the main attributes associated with the organization and assessing the sentiment of public opinion on the organizational reputation. Monitoring online newspapers allows organizations to understand public sentiment and proactively manage their reputation, by identifying emerging issues or negative perceptions in advance and implementing corrective actions promptly to mitigate potential damage to their reputation. Moreover, cultural organization and museums can trace the contents that resonate in the public debate and develop strategies to increase their visibility, with consequences on their performance in terms of visitors and revenue.

Originality of the paper. Although several researchers have underlined the importance of the reputation concept for organizations, few empirical analyses have been devoted to exploring the topic in the context of museums (Chung et al., 2019; Van Riel, 2019; Fernández-Hernández et al., 2021). The originality of the research can be traced both for the theoretical discussion and the empirical application. Concerning the theoretical discussion, the research is original in the tentative of merging the theories of reputation in management and organizational studies with the studies of museum management. Moreover, in empirical terms, the research enlarges the debate on museum reputation with an original study on the Uffizi Galleries reputation, using an original dataset constructed ad hoc for the analysis. Previous research on the Uffizi Galleries and the digital dimensions was interested in investigating the museum business model and digital strategy. To the best of our knowledge, no previous studies of museum organizations apply text mining, and in particular topic modelling, for assessing the reputation of museums using data from online newspapers.

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Cruise ship size and public perception: An explorative study on X

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Abstract

In a cruise industry where ship size has constantly increased, together with the number of attractions on board, the purpose of this article is to explore public perceptions and feelings when facing with mega vessels and understand whether negative effects related to a mass and crowded experience prevail over the positive effects linked to the greater variety of activities, facilities, and experiences offered by these vessels.

To explore public perceptions, a sentiment analysis and an emotion detection were carried out, adopting a lexical approach, on the posts published by users on social media X, in the month following the official debut of the world's largest cruise ship: Icon of the Seas, of Royal Caribbean International (RCI).

The results reveal a particularly positive public sentiment toward the vessel and the presence of particularly favorable emotions such as anticipation, trust, and joy. The new type of cruise experience emerging from gigantism and the desire to socialize and interact with other cruisers on board the ship seem to prevail over the crowding effects of a mass environment.

The originality of the article lies in exploring the influence of cruise ship size on public perceptions and feelings, a factor that has not been extensively studied by extant literature.

The study offers important managerial contributions on how mega vessels are perceived by the public and the emotions they can arouse. Cruise managers can take advantage of positive public sentiment and emotions related to the debut of new mega cruise ships, e.g. by benefiting from online word-of-mouth, which can arouse retention and travel intentions in the rest of the public.

However, the study is not without limitations that may be overcome by future studies, such as extending the timespan used for data collection or using methodologies not based on lexical dictionaries, but on more sophisticated approaches, such as machine learning, to better understand the facets of the opinions expressed by the public on social media.

Key words: Cruise ship size; Cruise experience; Sentiment Analysis; Emotion Detection; Cruise industry

Framing of the research. *On the world cruise scene, Royal Caribbean cruise line's Icon of the Seas has attracted particular attention in the recent past. The world's largest ship, which first set sail in June 2023 but returned to the shipyard soon after (McGillivray, 2023), had her first formal debut on 27 January 2024, departing from the port of Miami in Florida (Royal Caribbean, 2024).*

Not only this vessel is 365 meters long, with a gross weight of 250,800 tonnes and a capacity for 7,600 passengers, making it the largest cruise ship in service, but Icon of the Seas offers also a unique experience to its passengers based on design elements never seen before all together on a cruise ship. It offers 7 pools, including an infinity pool overlooking the sea, 6 water slides, a family suite arranged on 3 levels, an Aquadome, an ice-skating rink, Broadway-style shows and more (Fielding, 2023). Cruisers can also experience a lot of moments of conviviality when considering 40 restaurants, bars, and entertainment spaces (Yeğinsu, 2024). Thus, Icon of the Seas marked an important turning point for the cruise industry. However, a vessel of this size could also increase public perceptions of a mass-tourism experience, that during Covid-19 pandemic has become less popular. The presence of common areas and high volumes of cruisers may lead to density problems, both in terms of space and human presence, leading to crowding effects.

Icon of the Seas represents a cruise ship that is particularly interesting to study due to the fact that it started sailing in the aftermath of the Covid-19 pandemic that has particularly affected this industry, causing severe suspensions and slowdowns following the spread of the infection on board ships (CDC, 2020a; Gössling et al., 2021; Liu and Chang, 2020; Ito et al., 2020). Indeed, the typical characteristics of a mega cruise ship, such as confined, crowded, and interactive places (Bert et al., 2014), have increased the vulnerability of passengers and facilitated disease transmission (Ito et al., 2020). Aspects that could influence people's perceptions and feelings about cruises, in terms of perceived risk and future travel decisions (Castaldo et al., 2021; Floyd and Pennington-Gray, 2004; Holland et al., 2021; Muritala et al., 2022).

Crowding and a high number of passengers, related to the ship size, however, besides being a crucial aspect during health crises, are elements that can influence tourists' satisfaction and appreciation of the experience even in normal

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situations. It is, therefore, an issue that has been explored in the literature concerning the world of tourism and hospitality (Vaske and Shelby, 2008), particularly concerning certain over-visited tourist destinations and, therefore, the phenomenon of over-tourism and its impacts (Jacobsen et al., 2019).

Literature has already focused on the different attributes of a cruise ship that influence the decision making of cruisers and potential cruisers (Xie et al., 2012), but, even if the industry tendency towards mega vessels started a long time ago, very few studies have considered ship size among these attributes (Castillo-Manzano and Lopez-Valpuesta, 2018), considering more different onboard elements (Weaver, 2005; Xie et al., 2012) or the shipscape, i.e. "both the man-made physical and social environment in which the cruise service is delivered (the ship), as well as the natural environment (the ocean) that provides a broader experiential context" (Kwortnik, 2008, p. 292; Mahadevan and Chang, 2017).

Mega cruise ships can create negative effects on consumers' perceptions, behavior, and satisfaction (Blut and Iyer, 2019; Kwortnik, 2008), due to the numerous disadvantages that can be generated onboard, such as prolonged waiting times, long queues, and lack of tranquility in public places (Papadopoulou et al., 2023; Sanz-Blas et al., 2024). Aspects that can foster the creation of unfavorable feelings and emotions, as negative emotions may intensify when the individual protection space is crossed. Once this space is crossed by strangers, emotions of fear and anxiety can emerge in consumers (McNaughton and Corr, 2004; Jacobsen et al., 2019). These emotions were particularly frequent among consumers on board cruise ships during the Covid-19 pandemic, due to the increased perceived risk of contracting the disease on board ships (Quintal et al., 2022). At the same time, however, the large number of passengers to interact with, together with the greater variety of activities and facilities present on a mega vessel, can also be a positive factor as it can increase the fun and joy experienced by cruisers (Kwortnik, 2008; Noone and Mattila, 2009).

Purpose of the paper. Due to these premises, this study aims to explore the impact of cruise ship size on public perceptions and feelings, understanding whether negative effects related to a mass and crowded experience prevail over the positive effects linked to the greater variety of activities, facilities, and experiences offered by bigger vessels. Thus, the following research question emerges:

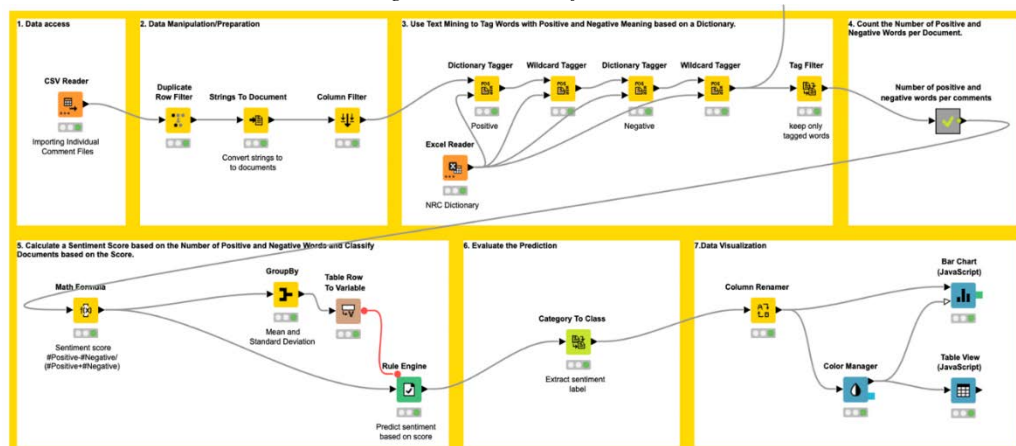
RQ: What is the influence of cruise ship size on public perceptions and feelings, especially in the aftermath of the Covid-19 pandemic?

Methodology. To answer the research question, the study conducts a sentiment analysis combined with an emotion detection analysis to better understand cruisers perceptions and feelings towards mega cruise ships. It was chosen to explore public communication disseminated on social media as these are tools that can collect consumers' word-of-mouth, opinions, and reviews concerning certain experiences (Litvin et al., 2018). More specifically, we focus on social media X, as it represents the ideal place for online debate and discussion on emerging and particularly topical issues (We are social, 2023), such as the official debut of the world's largest cruise ship: Icon of the Seas.

Specifically, the collected data constitutes the posts published by users on the X platform using the hashtag #IconoftheSeas, in a time frame of a month, i.e. from 27th January 2024 (the date on which the ship made its official debut from the port of Miami, Florida) to 27th February 2024.

With the increasing use of social media and the multiplicity of data available on it, sentiment analysis has become a relevant tool for understanding public perceptions and sentiment (Nagamanjula and Pethalakshmi, 2020). Such analysis allows extracted textual data to be assigned a positive, negative, or neutral valence (Alaei et al., 2019; Thelwall, 2019). Over time, such analysis has become increasingly important in research regarding the tourism and hospitality industry where the audience holds an important role (Alaei et al., 2019; Xiang et al., 2015). In this study, sentiment analysis followed a lexical approach, i.e. based on the use of a dictionary, and it was conducted on the KNIME software, i.e. an open-source platform that creates a workflow from the combination of different nodes (Villarrol Ordenes and Silipo, 2021). Figure 1 shows the workflow imported into KNIME, which partially retrieves a workflow uploaded on KNIME Hub "Building a Sentiment Analysis Predictive Model - Lexicon Based Approach" (Villarrol Ordenes and Silipo, 2021) later adapted to the needs of this study.

Fig. 1: KNIME Workflow

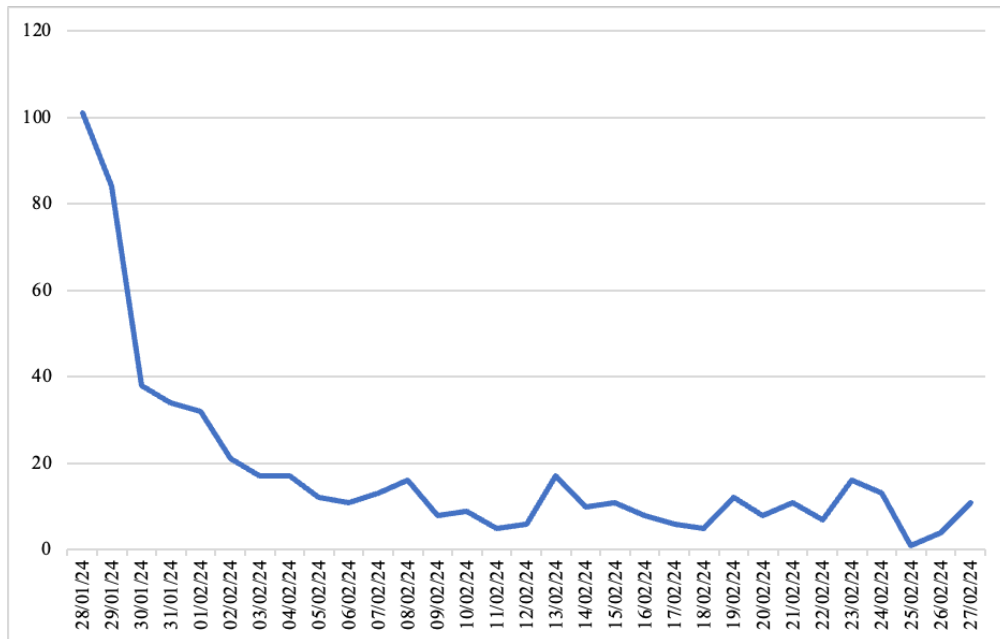


Source: Personal Elaboration from KNIME software

In addition to sentiment analysis, an emotion detection was also conducted to explore the emotions aroused in the audience by the investigated phenomenon. Emotion detection was possible by means of R software, using the NRC Word-Emotion Association Lexicon (Mohammad and Turney, 2011). This dictionary consists of over 10000 words studied according to 2 feelings and 8 emotions: anger, fear, expectation, trust, surprise, sadness, joy, and disgust (Mohammad and Turney, 2011; Mohammad and Turney, 2013). These 8 emotions were defined by Plutchik (1994) as basic, or prototypical emotions and they are therefore particularly relevant for exploring audience emotions.

Results. The total number of posts collected and analyzed, over the time frame selected, is 564. Figure 2 shows how the peak of the online discussion, about the Icon of the Seas theme, occurred around the day of the cruise's official debut, with its departure from the port of Miami, and then remained more or less constant for the rest of the considered time horizon.

Fig. 2: Evolution of online discussion related to the hashtag #IconoftheSeas

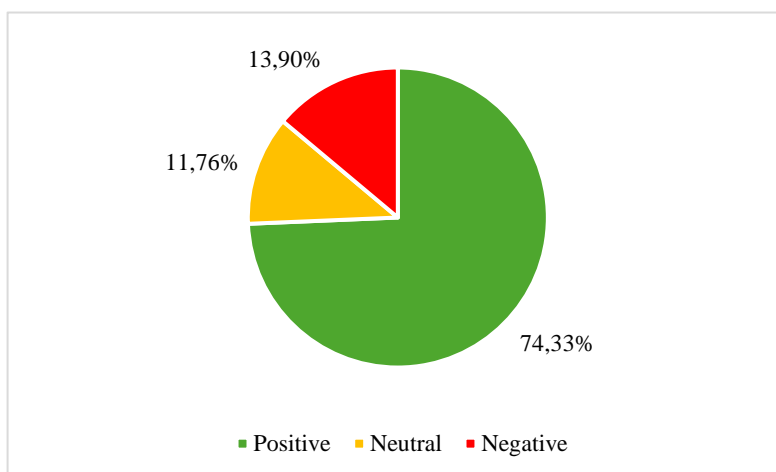


Source: Excel Personal Elaboration

Most of these posts were accompanied by multimedia content: photos for 36.35%, videos for 25.71%, and albums for 11.17%. Only 26.77% of the posts were purely textual.

As for the sentiment generated in the audience, the discussion on social media X showed a predominantly positive sentiment, with 74.33% of the total, neutral for 13.90% and negative for only 11.76% (Figure 3).

Fig. 3: Sentiment Score



Source: Excel Personal Elaboration

Figure 4 shows some examples of posts published on X and their relative Sentiment Score - positive, neutral or negative. In particular, posts with a positive sentiment in the audience often showed a particular appreciation of the wide

range of services offered by the cruise and the high level of technological innovation on board the ships. While posts that showed a negative sentiment in the audience focused more on the too big dimensions of the ship and the environmental concerns related to such mega vessel. Indeed, over time, tourists have become increasingly responsible and aware of the environmental damage caused by cruise ships (Yip et al., 2023). In particular, the Covid-19 pandemic with the suspension of cruising activities has made the damage done to the environment even more evident to the public, leading eco-friendly consumers to prefer smaller vessels that also offer more luxurious experiences (Elliott, 2023).

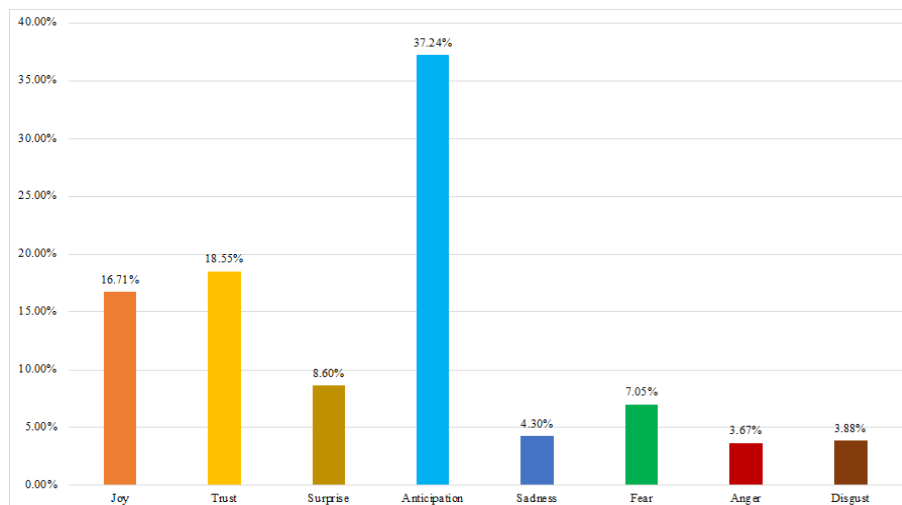
Fig. 4: Sentiment Score Example of Sentiment Score per Post on X

RowID	Comments	Negative Words	Positive Words	Sentiment Score	Sentiment Prediction
Row2	"I review our trip on the largest cruise ship in the world, give my top 10 tips, and also answer: "Is it worth the cost?" Do you have any interest in sailing on Icon of the Seas? #iconoftheseas #royalcaribbean #Rcl"	0	6	6	POSITIVE
Row22	"Welcome to the largest Casino Royale in the fleet! 🎰 #iconoftheseas #royalcaribbean"	0	4	4	POSITIVE
Row35	"Royal Caribbean's new ship, Icon of the Seas, is filled with fun and excitement each evening! It's okay. You can sleep in the next day! #IconoftheSeas #RoyalCaribbean"	2	4	3.666666666666665	POSITIVE
Row179	"Introducing the majestic #IconOfTheSeas, the new giant of @RoyalCaribbean! 🏰👑 With dimensions that defy imagination and experiences that break molds, this #cruise awaits to take your #adventures to the next level. 🤖👑 #TheBestIsYetToCome"	4	4	3.5	POSITIVE
Row231	"Largest Waterpark at sea? Yes. 🏊‍♂️ #Category6 #IconoftheSeas"	0	4	4	POSITIVE
Row161	"somehow I went on the world's largest cruise ship @RoyalCaribbean #IconoftheSeas for 7 nights with all those food and drink options and managed to LOSE 2 pounds 🙄 granted I did walk over 40 miles cross-crossing the ship"	2	2	1.5	NEUTRAL
Row9	"There are so many bars on this ship I may die #IconOfTheSeas"	2	0	-1	NEGATIVE
Row60	"Enormous #iconoftheseas ! @RoyalCaribbean @emiletravel #cruiseship"	2	0	-1	NEGATIVE

Source: Personal Elaboration from KNIME software

About the emotions of the audience, Figure 5 shows that the emotion most felt by the audience was anticipation with a value of 37.24%, followed by trust with 18.55% and joy with 16.71%. Consumers were particularly pleased to find so many areas dedicated to specific target consumers that encouraged socialization and new encounters among cruise passengers on board the ship.

Fig. 5: Emotion Detection



Source: Excel Personal Elaboration

The results show the predominance of positive sentiment and favorable emotions, such as anticipation, trust, and joy. On the contrary, negative sentiment and particularly unfavorable emotions, such as fear, anger, or disgust, appear to be very low. The clear predominance of the “anticipation” emotion is a very good sign for the cruise company, as it testifies the future orientation of the audience and, therefore, its intention to try or repeat the experience. This emotion is also particularly relevant considering the Covid-19 pandemic, as it determines the resilience and willingness to travel again of the cruising public, leaving behind the forced social distancing of the Covid-19 pandemic (Xiao et al., 2020). Thus, cruise ship size does not seem to be a concern for the public: the positive effects linked to the greater variety of activities, facilities, and experiences offered by the new vessel prevail over the negative effects related to a mass and crowded experience.

The generation of emotions such as joy and enjoyment can be related to the public's satisfaction in being able to interact and socialize with new people, i.e. a positive evaluation of the size of the ship that permits high passenger capacity on board the vessel, with high social interactions (Kwortnik, 2008; Noone and Mattila, 2009; Park et al., 2021). Such public emotions may depend, for example, on the appropriate management of the space on board the ship (Zehrer and Raich, 2016), made increasingly possible using numerous technologies. For example, the use of Apps for booking certain services, or the use of QR codes, makes it possible to better manage attendance at certain places and zones of the cruise vessel, avoiding overcrowding and the generation of disruptions (Sanz-Blas et al., 2024).

Furthermore, the fact that negative sentiment and mixed emotions stem from specific issues can help organizations in appropriately communicating and managing these issues as well. For example, regarding the issue of sustainability, organizations could disseminate appropriate campaigns aimed at communicating the vessel's new standards for sustainability with the use of energy-efficient technologies or educating the public on the increasingly responsible use of resources on board ships. This is why passenger education, especially when ship capacity is particularly high, is a particularly relevant aspect (Sanz-Blas et al., 2024).

Research limitations. The study presents some limitations that could be ironed out in the future. Firstly, the number of posts collected and analyzed on X could be expanded, following the evolution of the phenomenon and the online debate generated around the ship *Icon of the Seas*, to gather more generalizable results. Secondly, the study of this phenomenon could be approached by considering a variety of online discussion channels such as other social media to observe potential differences between consumer opinions spread across different digital platforms, such as TripAdvisor. Exploring differences in opinions and perceptions between consumers of different ages and from different countries of origin could highlight differences related to culture. Finally, in terms of the followed methodology, future studies might abandon dictionary-based lexical methods and favor more sophisticated approaches based on machine learning, artificial neural networks, or linguistic models such as Google BERT to explore audience sentiment and perceptions in a more comprehensive and detailed manner. Machine learning-based methods enable a more comprehensive observation of textual data but require significantly more computing power than lexicon-based approaches (Hossen and Dev, 2021).

Managerial implications. This research provides academic and practical implications. From an academic point of view, this paper advances the literature on the different attributes of a cruise ship that influence public perceptions and emotions, focusing on cruise ship size, a rather neglected area of research.

From a managerial viewpoint, instead, the study offers valuable hints on how to enhance the communication of cruise experiences, leveraging opportunities for interaction and sociability, to increase consumer retention and the diffusion of positive experiences and reviews to the rest of the public. From our research, the public does not seem to be concerned with cruise ship size and crowding. The creation of particularly positive sentiments and favorable emotions in the audience could be a valuable tool for organizations to use as it influences further positive tourist behavior such as loyalty and recommendation of the experience to others (Sanz-Blas et al., 2024). The emphasis on the positive aspects could also help in overcoming some of the critical issues that have emerged among specific consumer segments that are more environmentally responsible.

Originality of the paper. The originality of this work lies in the contribution to the theoretical knowledge related to public perceptions and emotions towards cruise ship size, observing the recent debut of a mega vessel, *Icon of the Seas*, the most innovative and largest ship in the world, with state-of-the-art features and services designed to elevate the cruise experience.

To the best of our knowledge, only a few papers have considered vessel size among the attributes of a cruise ship that influence public perceptions, so this work tries to advance a research area that requires more in-depth investigation.

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The motivations behind religious and spiritual tourism: an empirical investigation on Assisi visitors

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Abstract

This study investigates the motivations underpinning travel to religious and spiritual destinations, aiming to identify distinct visitor segments based on common motivations. Employing a dataset of over 600 individuals, an empirical analysis was conducted. Three distinct visitor clusters emerged, differentiated by the relative prominence of three core motivations: spiritual fulfillment, knowledge seeking, and escape from daily routines.

The research concludes by offering managerial implications for policymakers and stakeholders of religious and spiritual tourist destination. These insights can be used to optimize marketing strategies and enhance destination appeal by more effectively addressing the diverse needs of religious and spiritual tourists.

Key words: *religious tourism; spiritual tourism; travel motivations; tourist segmentation*

Framing of the research. *Religious tourism involves people travelling to sacred places or events. More broadly, it may include journeys undertaken by individuals from different cultures and belief systems to destinations that they consider meaningful in fulfilling their spiritual aspirations (Ozcan et al., 2019; Poria et al., 2003; Scaffidi Abbate and Di Nuovo, 2013; Timothy and Olsen, 2006).*

Several researches state that there are a variety of motivations behind religious tourists, such as seeking long-term benefit, unravelling the meaning of life, achieving personal values on a physical, emotional, spiritual and intellectual level (Liro, 2021; Cohen, 1998), spending leisure time with family and friends, relaxing and participating in religious festivals and visiting social, historical and cultural places (Herzog et al., 2011; Bond et al., 2015; Canoves and Forga, 2016; Kainthola et al., 2021; Raj and Griffin, 2015). According to the study of Amaro et al. (2018), strictly religious and fideistic motivations - understood as the profession of one's faith - would be behind many other motivations such as broad spiritual aspects, escape from routine, nature and sports experience and cultural motivations (Bilim and Düzgüner, 2015).

In this sense, Bond (2015) highlights the presence of different orientations that visitors to sacred places could present, even in an overlapping way. The first is the heritage-oriented one, according to which the traveller shows greater interest in the cultural dimension, both of sites and monuments and historical figures of the past. The second is that of pilgrimage, according to which the purpose of the journey is mainly to live a profound and significant spiritual experience for one's life. Finally, the third is the purely religious one and the objective is to exercise acts of devotion that allow spiritual and mental reconnection with one's community of believers and the chosen place connects to a specific saint or event associated with their faith.

From the literature it emerges that the motivation that often turns out to be the main is the spiritual one, understood in a broad sense and not strictly linked to a particular religious' confession. In this sense, spirituality should be viewed as an overarching framework encompassing religiosity. Gassiot-Meilan et al. (2019) aptly differentiate the two, noting that religion carries a collective connotation, whereas spirituality is deeply personal, shaped by individual identities, whether religious or non-religious. In essence, spirituality finds expression through religion, but it also manifests through other core values, stemming from an innate and inherent quest.

Beyond the spiritual motivation, as reported by the literature analysed above, more and more studies highlight how it is accompanied - or sometimes replaced - by other motivations linked to the need to escape from everyday life (escape motivation), or to know and discover the heritage local and the communities visited (cultural motivation) (Amaro et al., 2018; Sanagustín-Fons et al., 2019; Chun et al., 2018; Bond, 2015).

Purpose of the paper. *This study aims to explore the phenomenon of religious and spiritual tourism in the city of Assisi, focusing on identifying potential clusters of tourists who share homogeneous motivations for their visit. The choice of Assisi stems not only from its renowned importance in religious tourism, associated with the figures of Saint Francis*

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and Saint Clare, but also from the growing interest in spirituality, the search for transformative and cultural experiences. In this context, the goal is to outline the boundaries of the various groups of visitors, categorized according to their intrinsic motivations, which range from strictly religious to spiritual, cultural, and personal interests. Understanding these motivational profiles is considered fundamental for a comprehensive picture of religious tourists. By identifying these clusters, this research aims to contribute to research on religious tourism motivations.

Through an in-depth data analysis, the work aims to provide valuable insights for tourism operators, local authorities, and the academic community, contributing to guiding future management strategies for tourism in areas of high religious and spiritual interest.

Methodology. Data collection took place in Assisi during 2022 - from June to December. A structured questionnaire was administered to visitors with the support of the municipal tourist office and 620 individuals replied. Some responses have been excluded due to too many missing answers, thus obtaining a final sample of 592 individuals.

The questionnaire included several sections, concerning, among the others, the motives at the basis of the visit and socio-demographic variables. A set of items derived from the literature was used to measure visitor motivations (Albayrak et al., 2018; Kolar and Zabkar, 2010; Li and Cai, 2012; Rivetti and Lucadamo, 2023; Schofield and Thompson, 2007; Tsai, 2021; Yoon and Uysal, 2005). These items were measured through a seven-point Likert scale (1 = strongly disagree; 7 = strongly agree).

Data analysis took place in two stages, using the software “R” (R Core Team, 2021). In order to build profiles of visitors based on their motivations, we performed a Principal Component Analysis (PCA) and subsequently a cluster analysis.

Results. In order to perform the PCA, we considered the items concerning visitor motivations. Based on the cumulative variance criterion, we selected the first five components, explaining about 87% of the total variance.

Considering absolute contribution of variables to the formation of the components (table 1), we can proceed to their interpretation. The first component is mainly characterized by variables concerning spiritual/religious motives, and specifically: “To gain a sense of accomplishment”, “To feel inner harmony/peace”, “To seek spiritual comfort”, “To experience a sense of closeness to God”, “To experience a holy atmosphere”. The variables characterizing the second component concern knowledge motivation: “To increase my knowledge”, “To visit historical places”, “Interest in the culture and traditions of Assisi”. Instead, the third component seems to represent escape motivation, since it is characterized by the following variables: “To be away from daily routine”, “To release my work pressure”, “To rest and relax”. The fourth and fifth components are respectively characterized by a sub-set of variables that fall within the knowledge motives (“To increase my knowledge”, “Interest in the culture and traditions of Assisi”) and spiritual/religious motives (“To gain a sense of accomplishment”, “To feel inner harmony/peace”, “To experience a holy atmosphere”).

Tab.1: Absolute contribution of variables

Variable	Dim1	Dim2	Dim3	Dim4	Dim5
To increase my knowledge	4.511	19.448	5.211	54.124	3.843
To visit historical places	3.313	28.475	8.032	1.263	0.139
Interest in the culture and traditions of Assisi	5.533	19.081	5.923	32.957	1.138
To be away from daily routine	8.659	0.684	21.894	3.790	0.021
To release my work pressure	8.900	0.931	22.633	0.152	0.207
To rest and relax	8.644	2.863	20.151	0.396	8.967
To gain a sense of accomplishment	12.839	1.353	0.101	4.227	29.663
To feel inner harmony/peace	13.113	5.327	2.071	0.804	11.625
To seek spiritual comfort	13.261	7.228	2.549	0.131	1.786
To experience a sense of closeness to God	10.771	9.984	4.995	0.517	6.988
To experience a holy atmosphere	10.455	4.626	6.441	1.639	35.621

Considering the components extracted through the PCA, we performed an agglomerative hierarchical cluster analysis, in order to identify groups of visitors on the basis of their motivations, using the clustering criterion proposed by Ward (1963). In this way, we obtained three clusters, made up of 182 (cluster 1), 143 (cluster 2) and 267 (cluster 3) individuals. The clusters are shown in figure 2, considering a cartesian plane in which the first and the second component constitute the abscissa axis and the ordinate axis respectively. We can observe that the first cluster is placed in the third quadrant, which presents negative values for both the first two components, indicating that this group is probably made up of poorly motivated individuals, at least as regards spiritual/religious and knowledge motivations. Instead, the second cluster is placed in the second quadrant, and this signals that these individuals are motivated by knowledge rather than spiritual/religious motives. Finally, the third group is mostly distributed within the first and fourth quadrants, and this certainly indicates a strong spiritual/religious motivation.

Fig. 1: The clusters



In order to understand the characteristics of the groups in more detail, it is essential to consider the variables which are significantly associated with them. As shown in table 2, individuals in the first cluster are not motivated either from a religious/spiritual point of view, nor by knowledge nor do they seem to visit the destination for escape motives. In light of this, we name this group “unmotivated”.

Tab. 2: Variables significantly associated to the first cluster

Variable	v.test	Mean in the cat.	Overall mean	Sd in the category	Overall sd	p.value
To experience a sense of closeness to God	-2.741	4.184	4.850	2.018	2.265	0.006
To seek spiritual comfort	-3.822	4.092	4.978	2.014	2.163	0.000
To experience a holy atmosphere	-3.969	4.224	5.115	2.056	2.095	0.000
To feel inner harmony/peace	-4.658	4.184	5.204	2.044	2.044	0.000
To gain a sense of accomplishment	-6.926	2.697	4.316	1.709	2.180	0.000
To be away from daily routine	-7.178	3.105	4.708	2.068	2.083	0.000
To release my work pressure	-7.293	2.408	4.150	1.763	2.229	0.000
To rest and relax	-9.096	2.579	4.635	1.801	2.109	0.000
To increase my knowledge	-13.331	2.684	5.235	1.558	1.785	0.000
Interest in the culture and traditions of Assisi	-15.656	2.908	5.611	1.453	1.611	0.000
To visit historical places	-17.137	3.066	5.875	1.445	1.529	0.000

The second cluster is not characterized by variables concerning spiritual/religious and escape motivations. Surprisingly, only one variable reflecting knowledge motivation (“To visit historical places”) significantly contributes to this cluster. Despite this, also considering the location of the cluster in figure 1, previously highlighted, we can name this cluster “hungry for knowledge”.

Tab. 3: Variables significantly associated to the second cluster

Variable	v.test	Mean in the cat.	Overall mean	Sd in the category	Overall sd	p.value
To visit historical places	3.208	6.202	5.875	0.947	1.529	0.001
To rest and relax	-6.256	3.755	4.635	2.006	2.109	0.000
To release my work pressure	-8.022	2.957	4.150	1.964	2.229	0.000
To be away from daily routine	-8.446	3.534	4.708	1.961	2.083	0.000
To experience a holy atmosphere	-14.338	3.110	5.115	1.886	2.095	0.000
To gain a sense of accomplishment	-14.863	2.153	4.316	1.285	2.180	0.000
To experience a sense of closeness to God	-16.538	2.350	4.850	1.545	2.265	0.000
To feel inner harmony/peace	-16.794	2.914	5.204	1.544	2.044	0.000
To seek spiritual comfort	-17.957	2.387	4.978	1.372	2.163	0.000

The third cluster is characterized by all variables concerning motivation (table 4). Individuals in this group visit the destination not only for spiritual/religious reasons, although these motives, more than the others, characterize this group. In fact, also escape and knowledge motives are at the basis of their visit. Based on these evidence, we name this group “transversally motivated”.

Tab. 4: Variables significantly associated to the third cluster

Variable	v.test	Mean in the cat.	Overall mean	Sd in the category	Overall sd	p.value
To seek spiritual comfort	18.954	6.365	4.978	0.952	2.163	0.000
To feel inner harmony/peace	18.465	6.482	5.204	0.852	2.044	0.000
To gain a sense of accomplishment	18.254	5.663	4.316	1.429	2.180	0.000
To experience a sense of closeness to God	16.925	6.147	4.850	1.400	2.265	0.000
To experience a holy atmosphere	15.759	6.232	5.115	1.238	2.095	0.000
To be away from daily routine	12.583	5.595	4.708	1.614	2.083	0.000
To release my work pressure	12.275	5.076	4.150	1.927	2.229	0.000
To rest and relax	11.897	5.484	4.635	1.707	2.109	0.000
Interest in the culture and traditions of Assisi	10.449	6.181	5.611	1.089	1.611	0.000
To increase my knowledge	10.414	5.864	5.235	1.356	1.785	0.000
To visit historical places	8.763	6.329	5.875	1.051	1.529	0.000

Research limitations. A limitation of the research concerns the geographical scope of the study, which is exclusively focused on Assisi. Although this focus provides detailed insights into this specific destination, it may limit the generalizability of the results to other areas of religious and spiritual interest. Moreover, the analysis predominantly concentrates on the motivations of the visitors without deeply exploring the socio-cultural and economic context that could influence their perceptions and behaviours. These limitations, however, provide avenues for future research, inviting an expansion of the investigative horizon and the use of complementary methods for an even more nuanced understanding of the phenomenon.

Managerial implications. The study offers various managerial implications for destinations with a religious and spiritual vocation. Firstly, it underscores the complex and diverse of motivations driving visits to such places. The identification of distinct visitor clusters provides a robust foundation for developing highly personalized management and marketing strategies.

The heterogeneity of motivations, spanning from cultural and personal interest to spiritual exploration, necessitates a holistic approach to managing and promoting religious and spiritual tourist destinations. Destination Management Organizations (DMOs) must thus craft marketing strategies and tourism offerings that are both differentiated and inclusive, catering to diverse visitor needs and expectations. This entails a strong focus on personalized experiences, providing itineraries and activities that enrich visitors’ understanding and appreciation of the destination’s historical, artistic, cultural and spiritual facets.

Effective collaboration among stakeholders, including tourism operators, local authorities, and residents, is crucial for developing tourism experiences that enhance the destination’s cultural and spiritual heritage while preserving its cultural environment.

Moreover, the identified visitor clusters highlight the importance of integrated management considering the complexity of tourist experiences. Tourism operators must provide diversified ancillary services, such as accommodation, transportation, dining, and cultural access, to flexibly meet diverse visitor demands. The primary challenge for destination managers is harmonizing these services to deliver high-quality, enriching, and memorable experiences. This requires a sustained commitment to personalization, addressing both practical needs and the deeper dimensions of spiritual, cultural, and personal exploration. Effectively managing this diversity of needs is fundamental to the sustainable development of religious and spiritual tourism, fostering an inclusive and respectful hospitality model that accommodates various travel motivations.

Originality of the paper. The originality of this research is multifaceted. Firstly, our novel methodological approach allows for a nuanced differentiation of visitor motivations, surpassing traditional categorical frameworks. Secondly, by segmenting the target audience into distinct motivational groups, we offer a fresh perspective on religious destination selection. Finally, our findings not only enrich the existing body of literature by elucidating the influence of motivational factors on destination choice but also provide crucial insights for Destination Management Organizations (DMOs) in developing more effective tourism policies.

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Industrial tourism in Italy: a spatial analysis of regional patterns of specialization

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Abstract

Industrial tourism, a relatively unexplored research theme, involves a broad spectrum of attractions, from visits to operational companies and industrial sites to industrial archeology, intended as the complex of testimonies of industrial past and long-dead industries. In recent years, corporate museums have turned into main attractors in this niche of cultural tourism. Thus, in line with a more recent view, in the present study we consider both corporate museums and industrial archaeology sites as attractions of industrial tourism. The main aim is to determine the level of specialization of Italian regions in terms of industrial tourism, that is the weight that visits to corporate museums and industrial archaeology sites have on the total number of visits to museums, archaeological parks and all the other cultural institutions that make up the cultural tourism market, compared with the average values recorded at the national level. Thus, the paper aims to highlight spatial differences between Italian regions, identifying those in which industrial tourism demonstrates the greatest relative position compared to other market segments driven by the standard attractions of cultural tourism. The degree of specialization of Italian regions in terms of industrial tourism was measured through an adaptation of the Florence Index (FI), a measure of the dissimilarity between regional and national shares of a phenomenon. The data needed to calculate the indicator were gathered from the survey on “Museums and Similar Institutions” conducted by ISTAT, the Italian national statistical agency, in the year 2021. The results clearly delineated the specialization, in terms of industrial tourism, of two regions above the others (Emilia-Romagna and Sardinia), showing a weak situation for all other regions.

Key words: *Industrial tourism; corporate museums; industrial archaeology; regional specialization; Italy*

Framing of the research. *In the broad field of cultural tourism, increasing attention has been given to industrial heritage, made up of past and present industrial resources, able to generate potentially distinctive and memorable experiences (Vargas-Sánchez, 2015). This form of heritage is at the core centre of industrial tourism, which represents a relatively unexplored research theme, still lacking clear concepts and univocal definitions (Otgaar et al., 2010). Indeed, industrial tourism involves a broad spectrum of types, from visits to operational companies and industrial sites to industrial archeology, intended as the complex of testimonies of industrial past and long-dead industries (Frew, 2000). The term industrial tourism even takes on different meanings, depending on the national context in which it is applied. In some countries, such as Germany and France, industrial tourism is generally associated with industrial heritage and not with visits to operational firms, while in the Anglo-Saxon context a distinction is generally made between industrial tourism, intended as visiting operational firms, and industrial heritage tourism (Otgaar et al., 2010). Regardless the different labels, which in some cases only reflect a difference in language, industrial tourism “products” have been categorized considering both the places and the essence of this kind of experience for tourists (Li and Soye, 2006), generally interested in learning more about products, manufacturing processes, economic discoveries and historical backgrounds. Looking at previous studies, research has traditionally privileged long-dead industrial heritage, with a focus on mines (Edwards and Coit, 1996) and reconversion of past industrial sites (Boros, 2013), while limited attention has been given to tourism in operating facilities, largely overlooked from industrial tourism researchers (Garofano et al., 2022). In recent years, corporate museums have turned into main attractors in this niche of cultural tourism, offering new opportunities of interaction between firms and society (Riviezzo et al., 2022). Along with archives, to which they are often attached, corporate museums fulfill the dual role of preservation and enhancement of corporate heritage (Riviezzo et al., 2021a) and represent precious sites of organizational memory (Nissley and Casey, 2002). Even representing a consolidated phenomenon in industrialized countries, the lack of a definition univocally shared by management scholars*

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and practitioners determines the difficulty of collecting data on their performance as tourist attractions. In Italy, the phenomenon of corporate museums experienced a considerable growth starting from the 1990s and continued to grow in recent years, until exceeding 100 units (Garofano et al., 2022). In the present study, we consider both corporate museums and industrial archaeology sites as attractions of industrial tourism. As mentioned above, industrial archaeology deals with the interpretation of the surviving physical evidence to understand past human industrial and manufacturing activities. In its broadest definition, it includes past production plants, industrial villages, railway stations and mines, along with service infrastructures, such as aqueducts, bridges and dams (Cole, 2004). Owned and operated by living companies, corporate museums link the testimonies of corporate past with new kinds of tourist experience, able to make a substantial contribution to the enhancement of brands and corporate image (Riviezzo et al., 2021b; Riviezzo et al., 2022). Interestingly, industrial tourism not only comprehends visits by leisure tourists who after already having visited “standard” tourist attractions are looking for alternative and unique experiences, but also by students who want to learn more about production processes, as well as by professionals and other stakeholders who may be interested in industrial heritage for different reasons (Otgaar et al., 2010). Therefore, industrial tourism can make a strategic contribution to the competitiveness of cities and regions, with several potential benefits in terms of both income and image. Actually, industrial tourism represents a relevant market for those areas far from the most consolidated tourist circuits, especially for small destinations that can use industrial heritage also to attract local and regional visitors. Furthermore, industrial tourism is an interesting addition for rather traditional tourist destinations that are already successfully attracting tourists and may add a variation of the standard tourist program or create more appeal for second time visitors. However, the diversity of manifestations of industrial tourism and the multiplicity of potential tourist segments highlight the necessity to provide a more comprehensive view of the phenomenon, in order to identify possible forms of integration with other niches of cultural tourism.

Purpose of the paper. In the last decades, the importance of learning has emerged as a central element of tourists’ choice, as they have become more selective and have shown a preference for special interest tourism (Trauer, 2006) and other forms of consumer experience-oriented tourism (Mitchell and Mitchell, 2001). As an educational experience testifying the shift from passive attractions to active attractions (Otgaar et al., 2010), it is conceivable that the relative position of industrial tourism towards other attractions in the cultural tourism market is changing. Based on these assumptions, the present study aims at determining the level of specialization of Italian regions in terms of industrial tourism, that is the weight that visits to corporate museums and industrial archaeology sites have on the total number of visits to museums, archaeological parks and all the other cultural institutions that make up the cultural tourism market, compared with the average values recorded at the national level. Thus, the paper aims to highlight differences between the Italian regions, identifying those in which industrial tourism demonstrates the greatest relative position compared to other market segments driven by the standard attractions of cultural tourism.

Method. The degree of specialization of Italian regions in terms of industrial tourism was measured through an adaptation of the Florence Index (FI) (Innocenti, 2002). This index is a measure of the dissimilarity between regional and national shares of a phenomenon and describes the economic specialization of a region compared to the national average situation, which increases as the index increases. In the tourism literature, this index is typically used to analyze the level of specialization of different territorial areas in terms of tourist accommodations, for instance by comparing the weight of beds in an individual municipality relative to the municipal population, with the weight of beds in the province relative to the provincial population (Pascetta, 2014; Romagnoli, 2002). In the present study, the index was adapted by comparing the number of visitors to corporate museums and industrial archaeological sites in a single region compared to the total number of visitors to all (public and private) museums and other cultural attractors in that region, with the number of visitors to corporate museums and industrial archaeological sites throughout Italy compared to the total number of visitors to all Italian (public and private) museums and other cultural attractors. The formula for calculating the index is then as follows:

$$ITVi / CTVi$$

$$ITVtot / CTVtot$$

ITVi = number of industrial tourism visitors in the *i* region

CTVi = number of cultural tourism visitors in the *i* region

ITVtot = total number of industrial tourism visitors in Italy

CTVtot = total number of cultural tourism visitors in Italy

The data needed to calculate the indicator were gathered from the survey on “Museums and Similar Institutions” conducted by ISTAT, the Italian national statistical agency. The survey, of a census nature, was carried out through the completion of online questionnaires by the heads of each facility and covered all public and private, state and non-state institutions of different types and sizes that were open to the public in the year 2021. The multi-form questionnaire surveys the structural characteristics of museums, archaeological sites and monuments, total visitors owned, staff employed, collections owned, and collaboration and partnership relationships with other institutions in the area. ISTAT conducted the census-based survey between the end of March and the end of June 2022, sending the credentials and passwords of

the online questionnaire to the directors/managers of about 5,400 museums and similar institutions of museum character, achieving an overall response rate of 91.1%.

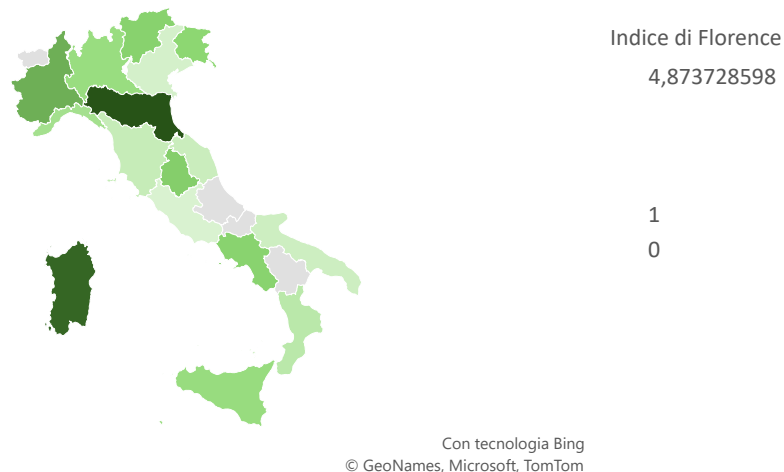
The number of corporate museums (privately owned, i.e., owned and operated by companies) in the final sample is 98, the number of industrial archaeological sites is 33, for a total of 131 industrial tourism attractions surveyed in Italy. Among the most visited corporate museums in Italy are the Ferrari Museum (with over 126,000 annual visitors), the Pietrarsa National Railway Museum (with over 106,000 annual visitors), the Lamborghini Museum (with over 36,000 annual visitors) and the Alfa Romeo Museum (with over 32,000 annual visitors).

According to the data collected, the industrial tourism segment is quite significant, with a total number of visitors of almost one million (920,219) in 2021, including all corporate museums and industrial archaeology sites.

Results. The application of the Florence Index (FI) yields, for each region considered (i.e., each region in which there is at least one industrial tourism attractor), a value of less than 1 if the ratio of the number of industrial tourism visitors to the number of cultural visitors in the region is insignificant compared to the value that the same ratio records at the national level; the value of FI, on the other hand, becomes close to 1 when the ratio of the number of industrial tourism visitors to the number of cultural visitors to the region is equivalent to the value that the same ratio takes at the national level and, therefore, there is no particular form of specialization of the region in terms of industrial tourism; finally, in the presence of values greater than 1 there is evidence of the presence of specialized regions vis-à-vis the national context.

The resulting map (Fig. 1) clearly delineated the specialization, in terms of industrial tourism, of two regions above the others (Emilia-Romagna and Sardinia), followed by five regions with a FI above 1 (Piedmont, Umbria, Trentino Alto Adige, Campania, Friuli Venezia Giulia). The analysis shows a weak situation for all other regions, which record a FI below 1. Interestingly, six regions have no industrial tourism attractors surveyed.

Figure 1 - Distribution of Italian regions in terms of industrial tourism specialization



If we look at specialization by spatial macro-areas, the northeastern regions and the islands turn out to have the highest FI, with a value close to 2 (Fig. 2).

Figure 2 - Distribution of Italian macro-areas in terms of industrial tourism specialization

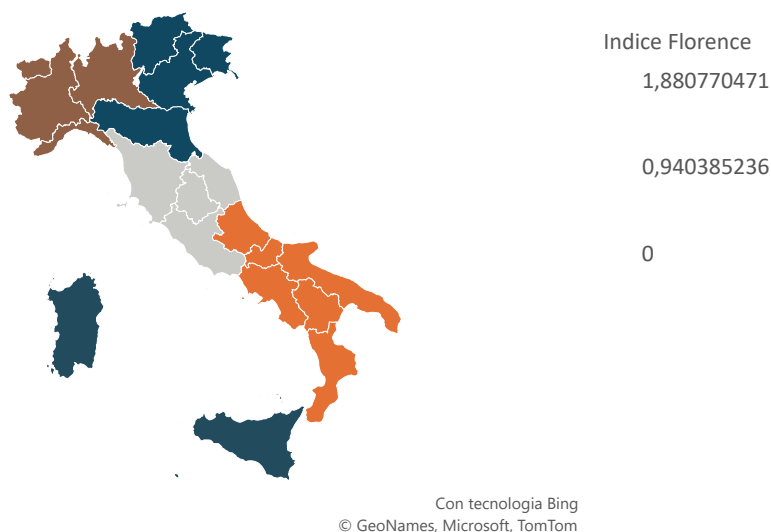


Table 1 shows in details the IF values, the number of corporate museums, the number of industrial archaeology sites and the most visited industrial tourism attractor in each region. Of course, the number of attractors influences the IF value. However, the region with the highest number of industrial tourism attractors (Lombardy, with a total of 23 attractors) shows an IF value below 1 (0,86), thus the level of specialization is insignificant compared to the national level.

Table 1 - IF values, corporate museums, industrial archaeology sites and most visited attractor in the Italian regions

Region	IF	N. Corporate Museums	N. Industrial Archeology sites	Most visited attractor	N. Visitors
Emilia-Romagna	4,8737286	15	3	MUSEO FERRARI MARANELLO	126000
Sardinia	4,3287583	7	10	PORTO FLAVIA	40212
Piedmont	2,2180861	12	3	BORGO E ROCCA MEDIEVALE	100000
Umbria	1,3244548	5	0	MUSEO STORICO PERUGINA	25551
Trentino-Alto Adige	1,2152251	3	3	FONDAZIONE CAMPANA DEI CADUTI	21953
Campania	1,1795307	2	1	MUSEO NAZIONALE FERROVIARIO DI PIETRARSA	106649
Friuli-Venezia Giulia	1,0547628	4	2	MUSEO DELLA TRADIZIONE MINERARIA - POLO MUSEALE CAVE	19500
Sicily	0,8710742	1	3	EX STABILIMENTO FLORIO DELLE TONNARE DI FAVIGNANA E FORMICA	42588
Lombardy	0,8564191	20	3	LA MACCHINA DEL TEMPO - MUSEO STORICO ALFA ROMEO	32382
Liguria	0,7081419	6	0	MUSEO NAZIONALE DEI TRASPORTI	1200
Calabria	0,4079209	1	1	MUSEO DEL BERGAMOTTO	3000
Tuscany	0,2531982	8	1	MUSEO PIAGGIO	15000
Marche	0,2051609	5	1	MUSEO DELLA MINIERA DI ZOLFO DI CABERNARDI	1000
Apulia	0,1619443	1	0	MUSEO DEL CONFETTO 'GIOVANNI MUCCI'	1850
Veneto	0,0648634	5	2	MUSEO REGIONALE DELLA BONIFICA CA' VENDRAMIN	1588
Latium	0,0032096	3	0	MUSEO DELLA ZECCA DI ROMA	235
Aosta Valley	0	0	0	\	\
Abruzzo	0	0	0	\	\
Molise	0	0	0	\	\
Basilicata	0	0	0	\	\

Research limitations. The visitor numbers to industrial tourism attractions give some idea about the demand for industrial tourism and the level of specialization of Italian regions, but more information is needed to get a comprehensive picture. Specifically, visitor numbers available are limited to corporate museums and industrial archaeology sites, while visitor numbers to operational firms opening their doors for factory tours are not included. Furthermore, even though the data were gathered from a survey conducted by ISTAT of a census nature, not all the corporate museums and industrial archaeology sites are represented in the final sample. Comparing the list of respondents with other studies, it is possible to note that some attractors (and relative number of visitors) are missing, especially in some regions. Finally, qualitative information concerning the demand for industrial tourism is needed in order to explore in-depth the characteristics and motivations of segments interested in industrial heritage.

Managerial implications. In line with the increasing request for special interest tourism based on educational activities, industrial tourism may intercept an increasingly larger share of the demand for cultural tourism. In the attempt to get a full picture of industrial tourism within Italian regions, the present study highlighted a rather heterogeneous situation. Obviously, for the different regional areas the demand for industrial tourism products very much depends on the kind of attractions within their borders. Corporate museums created around well-known and historical brands, such as Ferrari or Lamborghini, are naturally able to attract more visitors. Furthermore, corporate museums and industrial heritage sites focused on goods with a symbolic value for the region, as well as luxury goods and goods of everyday life have a great potential as industrial tourism products (Otgaar et al., 2010). Another factor to be considered is the size of the local market, which could partly explain some of the regional differences. Similarly, regions with a stable and strong tourist demand represent the favorable context for the development of an alternative blend of attractions on offer, which can be interesting for experienced tourists that have already visited the “must see” attractions. As both territorial areas (cities and regions) and companies (i.e., those owning and managing corporate museums) have a potential interest in the development of industrial tourism, our study offers guidelines for policy makers, destination marketing organisations and private operators, whose converging interests could provide a lot of opportunities.

Importantly, particular attention should be paid to potential synergies between the different sub-groups of industrial tourism, such as industrial heritage and corporate museums, to be considered as interconnected attractions. In this vein, visits to operational companies should be also considered as a central element of industrial tourism offer, able to offer to visitors valuable opportunities for authentic and satisfying recreational experiences, based on the observation of what is “behind the scene” of manufacturing activities (Savoja, 2011). Therefore, combination between different products is essential to make industrial tourism more attractive. Packages may include visits to several corporate museums (often combined with factory tours, as in the case of the automotive district in Emilia-Romagna). Furthermore, industrial tourism products can be combined with more traditional tourism attractions, in order to develop complete packages of cultural tourism, integrating different aspects of learning and leisure. Therefore, industrial tourism programs can be defined both as a driving force for the development of areas less suited to tourism and as an addition to the rich tourism product of cities and regions. In the latter case, industrial tourism initiatives not only target tourists, specifically second time visitors who want to see something different, but also residents who want to learn more about the regional productive excellences of the past and present and who can act as proud ambassadors of each region.

Our results highlighted that some regions have a good potential but are not able to fully exploit it. In these cases, the cooperation between public and private actors appears as particularly relevant, as well as the development of a strategy in which the main objectives of industrial tourism should be specified to gain support also from central governments. Along with adequate target group selection, the demand and attractiveness for industrial tourism can be enhanced by providing special visitor facilities, such as professional guides, interactive information panels, presentation facilities and so on (Otgaar et al., 2010). Furthermore, accessibility is very important for making industrial tourism products attractive, not just in terms of ease to reach a destination, but also regarding the availability of other tourism products nearby.

Originality of the paper. We believe that our study adds in different ways to the field of industrial tourism, which is a relatively unexplored topic in the broad field of cultural tourism. First, we considered different manifestations of industrial tourism, including visits to both corporate museums and industrial archaeology sites. Thus, we expanded the narrow view of industrial heritage tourism, which has long prevented the development of a comprehensive definition of tourist activities oriented toward the knowledge of production processes characterizing the past and present of specific territorial areas. Second, we focused on Italy, which compared to other countries with a long industrial history, such as Germany and UK, only recently has devoted attention to industrial tourism both in terms of academic reflection and concrete development programs. Finally, to the best of our knowledge, this is the first study applying the Florence Index (FI) to assess the degree of specialization of Italian regions in terms of industrial tourism. Highlighting differences and similarities between regions may help scholars, policy makers and private operators to reflect on the strategic contribution of industrial tourism to the competitiveness of the cultural tourism offer and guide them in the definition of a strategy aimed at reaching a competitive advantage over other areas.

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Crossing Green Tracks: The Role of Monumental Railways in Promoting Eco-Sustainable Business in Slow Tourism

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Abstract

Rail tourism is an industry that consistently generates economic value in numerous global regions, making substantial contributions to the fiscal well-being of governments that frequently provide support. Its growth can be attributed to emerging trends and increased environmental awareness among tourists. Monumental railways in Europe are significant sources of prosperity, encompassing substantial financial gains and a substantial influx of tourists. This form of rail tourism is classified as “slow tourism” which encompasses more than simply commuting to reach a destination; it also provides an opportunity to appreciate the journey, explore the uniqueness of historical sites, dine on cuisine originating from within a zero-kilometer radius, and interact with local communities and their culture.

By employing Green theory and Co-creation value, this article attempts to demonstrate how the utilization of the historic railway network in a particular Italian region, Sardinia, can serve as an example of a novel eco-sustainable business model capable of fostering revenue generation (economic sustainability), positive impacts on the local community (social sustainability), and territorial stewardship (environmental sustainability).

Key words: Railway Tourism; Slow Tourism; Historic Railways; Sustainability; Green Theory; Co-creation Value.

Framing of the research. *Rail tourism is a sector that in various parts of the planet manages to create value year after year, making an important contribution to the economic growth of the countries that support it. Although the figures for rail tourism are significantly lower than those for air tourism, the rail tourism sector is growing mainly due to new trends and awareness among tourists who are more and more aware of their ‘environmental footprint’ than in the past (Commission, 2020).*

In the rail tourism, the scenic view is a pivotal element, regardless of the journey’s length. This consideration radically shifts the perspective of analysis of the phenomenon from a purely transport point of view to a more complex one which involves the tourist, cultural and environmental dimensions. Consequently, it is no longer a question of choosing a means of transport but of conceiving the travel experience as something much more engaging guided by important values such as sustainability. Examples of this perspective can be found in the United States, where Amtrak provides a complete network connecting the entire country with Canada, treating travellers to an exceptional voyage highlighted by the breathtaking landscapes and natural beauty encountered along the route. In Africa, the prestigious Blue Train connects Cairo to Cape Town, traversing pristine landscapes and protected nature reserves, offering passengers a lavish travel experience. In Europe, the unique geography and distinct borders between countries create a highly segmented landscape, ideal for rail tourism that goes beyond long-distance travel, aligned with the concept of slow tourism, as it favours the discovery of historic centres, local cuisine at “km zero”, of the culture and communities along the route (Campolo, 2018).

Among the European countries that already exploit historical railways for tourism purposes, Great Britain and France are the ones with particularly significant values, both in terms of tourist flows and annual revenue. Great Britain with 850 km of lines has 139 tourist railways, and generates revenues of £400 million by attracting 13 million visitors per year (F.I.F.T.M., 2018). In France, on the other hand, it can be observed how the 1,200 km of tourist railways attract almost 4.5 million visitors per year, creating a turnover of about 60 million euros and a total of about 1,000 new jobs (Blancheton & Marchi, 2013).

In Italy, tourist railways are regulated by the Italian Law 23 August 2017, n. 128 and subsequent amendments and additions. The railway routes for tourist use are identified in Annex 1 of Interministerial Decree no. 146 of 17/05/2022 and add up to a total of 1,142 km. Of these, four sections are in Sardinia, for a total length of the routes equal to 438.7 km corresponding to 38.4% of the overall Italian total, (ARST, 2019). Moreover, in the case of Sardinia it must also be

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considered that these are “narrow gauge” railway routes, these stretches are unique in Europe, representing as much as 90% of the European total.

Purpose of the paper. Unlocking the Potential of Slow Tourism through Italian Legislation. *This research proposal is designed to explore how to leverage the opportunities presented by the aforementioned law to enrich the tourism sector through slow tourism. The goal is to drive economic growth for the region and deliver beneficial outcomes for both the land and its people (social sustainability), while steadfastly upholding environmental conservation (environmental sustainability) and enhancing financial prosperity (economic sustainability).*

To grasp the potential of this initiative, it is helpful to revisit Article 1 of Law 128/2017, which explicitly states:

“The purpose of this law is to safeguard and enhance railway sections of particular cultural, landscape and tourist value, which include the railway routes, stations and related works of art and appurtenances, and of the historic and tourist rolling stock authorized to use them, as well as the regulation of the use of velorails”.

The mention of the Law 128/2017 helps us categorize two distinct types of railway tourism. The first, of a contemplative nature, relies on the traditional use of trains, frequently comprised of vintage rolling stock that has been refurbished and, in certain instances, specifically adapted to be truly ‘green’—a status not yet achieved in areas like Sardinia. The second type is ‘active/experiential’ tourism, uniquely associated with the opportunity to travel these routes aboard a “ferrocycle”, a four-seater vehicle propelled by the pedalling of its passengers (Melis, 2021).

Furthermore, a significant innovation of Law 128/2017 is highlighted in Article 5, which offers the opportunity for regions traversed by railway routes to become key drivers in their socio-economic development. This is achieved by allowing them to request control over parts of these routes. Consequently, they can plan, organize, and implement their own tourism initiatives, ranging from contemplative to experiential activities, across the entire railway network. This approach enables a broad spectrum of entrepreneurial, social, and cultural entities to actively engage in enhancing the travel experience. They can do so by offering accommodation, local gastronomy, visits to nearby natural and archaeological sites, and participation in historical and cultural festivities, among others. Such engagement fosters a more profound connection with the local environment, culture, and traditions.

This research aims to exploit the potential of this law, in accordance with the paradigm that not only mitigates the carbon footprint linked with frequent travel but also champions the conservation of cultural heritages and natural resources, and moreover generating value by involving, in a bottom-up perspective, neighboring communities through job creation and entrepreneurial activities.

Although the academic literature lacks a consensus on slow tourism’s precise definition, scholars like Babou and Callot (2009) and Blanco (2011), and others have explored its multifaceted dimensions, underscoring its emphasis on quality experiences, local immersion, and environmental consciousness (Conway & Timms, 2010; Dickinson & Lumsdon, 2010; Dickinson et al., 2011; Matos, 2012; Savoja, 2011), all aspects strongly present in the purposes that the Italian law aims to promote.

The research further explores how slow tourism, both contemplative and, more importantly, active, bolsters local economies by channeling tourist expenditures toward small businesses, artisanal ventures, and local services, thus nurturing community development and resilience. This strategic shift from mass tourism, with its penchant for concentrated economic benefits and environmental disregard, paves the way for a more equitable and sustainable tourism revenue distribution.

Intriguingly, Timms and Conway (2012) anchor slow tourism within alternative tourism models like eco-tourism and community tourism, which are sustainable by nature, utilizing local resources effectively. They tie the concept of slow tourism to sustainable development as outlined by Campbell (1996), advocating for economic growth, environmental preservation, and social equity as its foundational pillars.

Monumental (or historical) railways stand as a testament to slow tourism’s ethos, offering transformative journeys that immerse travelers in the rich tapestry of regional histories, cultures, and landscapes, thereby endorsing sustainable travel experiences. As a cornerstone of rail tourism, these railways attract enthusiasts eager to relive the grandeur of travel’s golden era, navigating scenic and historical corridors. This segment, though smaller in comparison to air travel, significantly contributes to regional economic vitality, spurred by evolving trends and heightened environmental awareness among travelers. Italian Federation of Tourist and Museum Railways (FIFTM) statistics highlight the economic impact of tourist railways in Great Britain and France, underscoring the viability of rail tourism as a lucrative and sustainable venture.

This narrative of rail tourism, evolving towards more leisurely and experience-centric travel, in France dovetails with the Special Interest Tourism (SIT) category, emphasizing sustainable practices within the railway tourism sector Blancheton and Marchi (2013). This evolution towards slow rail tourism, prioritizing landscape exploration, cultural immersion, and the pursuit of new experiences, marks a shift away from the necessity of rapid travel, enhancing the overall journey’s allure.

The Italian legislation of 2017, then signifies a watershed moment for sustainable tourism, highlighting the untapped potential of historical and cultural rail routes for fostering sustainable tourism initiatives (Maggi, 2003).

For Sardinia, leveraging Italian Law 128 effectively could mitigate several challenges facing tourism in the region by:

- a) enabling the development of tourist offerings beyond the summer season, diversifying the region’s attractions beyond just beach resorts;

- b) *facilitating the integration of coastal tourism with that of the interior regions, which are experiencing alarming depopulation trends, thus reversing a seemingly irreversible negative trend;*
- c) *Transforming historic railways into assets that generate economic growth through entrepreneurial ventures, while also safeguarding cultural heritage and environmental legacies;*
- d) *To forge a robust partnership between communities and public administration, aimed at fostering and advancing the growth of this initiative.*

Methodology. *Our study is rooted in the Green Theory (Dunne et al., 2021; Wagner, 2002) and value co-creation (Galvagno & Dalli, 2014; Prahalad & Ramaswamy, 2000; Prahalad & Ramaswamy, 2004).*

This interdisciplinary approach allows us to delve deeper into environmental sustainability, highlighting the imperative for businesses to implement strategies that reduce their ecological footprint while promoting environmental protection (Raimi, 2017). At the same time, it considers synergistic collaborations between different actors (public and private) as an essential element for designing, supporting, including financially, organizing and managing the multiplicity of services to be activated or the infrastructural implementation and maintenance activities, in a perspective of co-construction of value for the different stakeholders (Melis, 2018; Melis et al., 2023).

On one side, Green Theory, under the Corporate Social Responsibility umbrella, advocates for the infusion of environmental considerations into corporate operations. This perspective not only scrutinizes the environmental repercussions of business activities but also evaluates their contributions towards sustainable development. Green theory represents a cross-disciplinary approach that intersects management, environmental sciences, social sciences, and more recently, international relations. It highlights the negative impacts of economic growth on climate change, emphasizing the importance of considering the rights of individuals, justice, citizenship, good governance, and environmental preservation. In line with this, environmentalists and ecologists encourage industries and manufacturers to integrate green principles into their operations and production strategies, aiming for sustainable benefits for both consumers and the environment over time. On the other hand, the value co-creation theory strengthens the previous approach as it places emphasis on the strategic importance of collaboration and mutual learning to operate together with a view to generating value for all stakeholders. This approach requires capabilities about dialogue, access of relevant resources for strategic making, risk assessment and individual responsibility making choices, transparency and reciprocity in the relationship among several stakeholders (Prahalad & Ramaswamy, 2004).

In order to evaluate the potential inherent in the law we make use of two methodological tools:

- *An exploratory market research carried out with a semi-structured questionnaire submitted to potential consumers to evaluate their knowledge on railway tourism and, above all, evaluate the interest in enjoying a ferrocycle experience (study a);*
- *a case study focused on the use of the ferrocycle along a short stretch of the historic “Mandas – Arbatax” railway line, exactly the “Gairo – Niala” one, combined with a business plan to evaluate the financial feasibility of the project (study b).*

Results. *This analysis is still in progress and early results can be summarized as follow:*

Study (a). The questionnaire.

We conduct an initial analysis using a semi-structured questionnaire comprising 28 questions. This is designed to gauge understanding of previously defined slow, contemplative, and active tourism forms, with a specific focus on familiarity with ferrocycling and interest in engaging with this muscle-powered mode of transport.

In this paper, we present only a selection of our findings for two reasons: data collection is still in progress, and our researchers aim to produce a more comprehensive study for future publication, supported by a stronger dataset.

The data collected at the time of preparation of this work concerns 810 questionnaires, of which 760 were correctly completed, divided by gender: 46.5% male and 53.5% female.

Early following elements emerge:

- *87.5% of respondents did not know the existence of the ferrocycle while 74.32% had no idea that in the context of slow tourism it is possible to distinguish between “contemplative” and “active” tourism;*
- *Among those who know it, 37.5% have tried it in France, 12.5% in Switzerland and 6.25% in Belgium;*
- *Again, among those who have experienced the ferrocycle all declared that they were able to cross and visit rural and naturalistic areas, partly also archaeological or areas of historical and artistic interest;*
- *Everyone who has lived the experience has benefited from it and would recommend others to do it;*
- *When asked if they would have liked to travel along a railway line in Sardinia with the ferrocycle, 43.35% answered “definitely yes”, 37.85% “maybe yes”, while 10.49% answered “I don’t know” and only 7.3% answered “maybe not” or “definitely not”;*
- *Similar percentages are found regarding the interest in staying in accommodation facilities located along the railway route that have been adequately renovated to provide quality services;*
- *Furthermore, another interesting data concerns the duration of a trip to be made with the ferrocycle for which 42.6% hypothesized “from 1 to 2 days”, 30.82% “from 3 to 5 days”, 13.43% “no more than one day”, 9.46% “from 6 to 7 days” and, a small percentage even for a longer time.*

These preliminary findings indicate a substantial interest among both local communities and prospective users. Study (a) uncovers considerable potential for ferrocycle utilization in Sardinia.

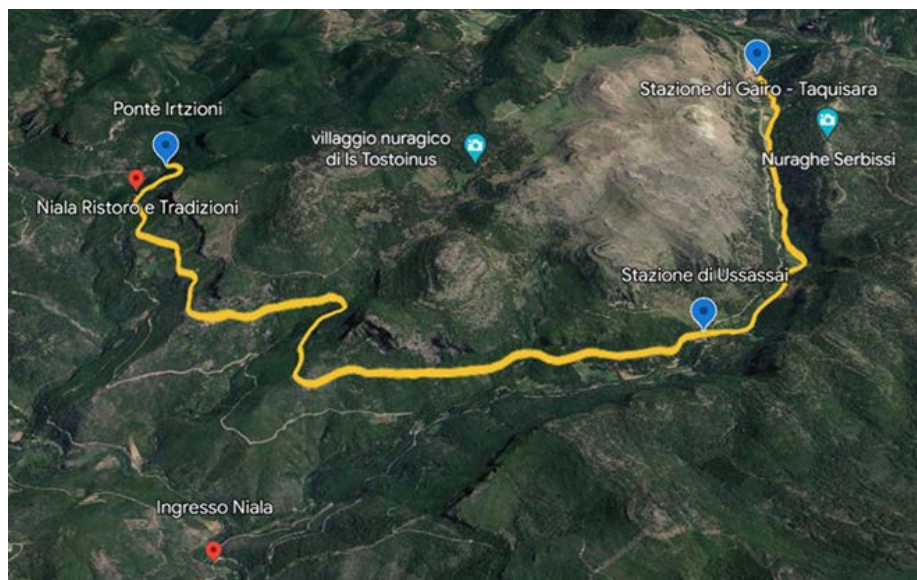
Study (b). The business plan.

In order to support the idea also from a financial and economic point of view, the study (a) was also supported by the provision of a Business Plan.

The findings from this business plan, shortened below, illustrate qualitative features and the economic feasibility of the investment, showcasing its viability.

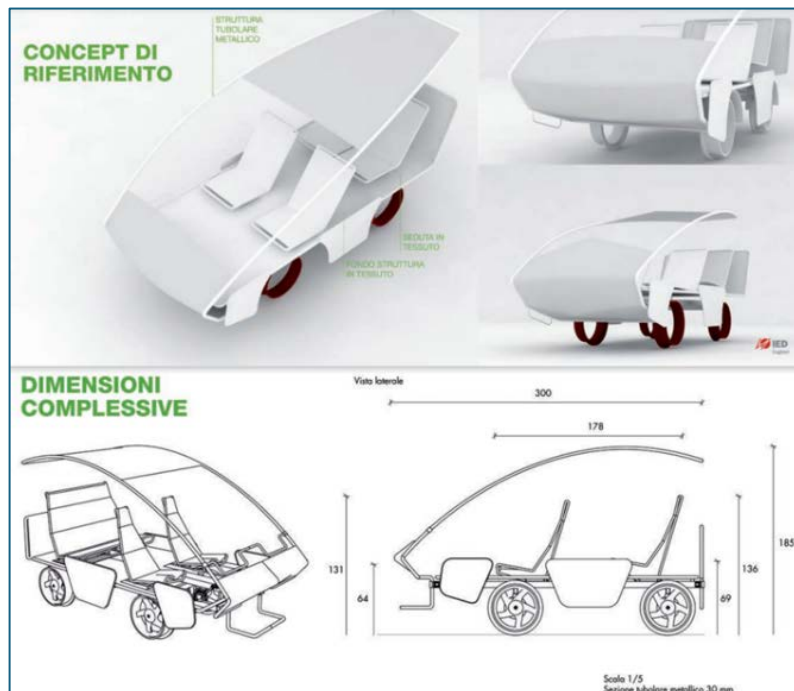
Business Model: In harmony with the law 128/2017, the business plan provide the management of the Gairo-Niala route is envisioned to adopt a cooperative approach, with the train station and the route being managed by a consortium of operators, through which to plan, organize and manage, in safety, tourist services complementary to the railway, taking advantage, above all, of the great experiential opportunity offered by the ferrocycle. It is reasonable to expect that this management role will be undertaken by a local tourism-sector cooperative, similar to practices observed with comparable entities across regional and national contexts. Such a cooperative would be tasked with staffing the station with skilled personnel dedicated to providing visitors with an exceptional tourism experience. The organization will form strategic partnerships with local entities like restaurants, producers, riding stables, hiking operators, and transfer services. This collaboration aims to offer clients exclusive discounts and broaden our venture's visibility through mutual promotion. Naturally, an important commitment must be dedicated to building these partnerships from a value co-creation perspective, without which there is a risk that the initiative will not function adequately and in compliance with the spirit of Italian law.

Figure 1. Gairo-Naila' railway route, train station called Taquisara



Product and Service description: The Gairo - Taquisara station is set to offer a diverse and enriching experience, aiming to provide visitors with a comprehensive journey. The primary attractive service will be the rental of ferrocycles for traversing the scenic 10-kilometer Gairo - Niala route. Beyond its core offering, the station will be transformed into a "museum station," enabling its spaces to serve multiple functions beyond just ferrocycle usage. These include hosting special events by renting out parts of the station, thereby leveraging its historical and cultural significance. Characteristic of Sardinia's historic railway stations, the Gairo-Taquisara station possesses unique qualities conducive to historical and cultural promotion, thereby adding to the region's rich heritage. A distinctive feature of this station will be an on-site shop offering tourists a glimpse into local craftsmanship and the opportunity to purchase souvenirs, enhancing the visitor experience. Furthermore, the station will provide bicycle rentals to encourage exploration of the surrounding landscapes, enriching the visitor's experience further. This multifaceted approach, combining leisure with cultural and historical education within the station-museum, is key to the initiative's success. As detailed in the financial overview, this model is projected to yield positive outcomes from the second year onward. Introducing ferrocycle rentals presents an unparalleled innovation in Sardinia, distinct from any existing options like the Green Train, which operates without conflicting schedules. Additionally, there are indirect competitors, specifically eight bicycle rental services across Ogliastra, none of which are in close proximity to the Gairo station. These services, however, cater to a different demand, focusing on traditional cycling experiences rather than the niche ferrocycle rail journey. Consequently, our competitive analysis will primarily focus on the Green Train, the sole direct competitor in this innovative tourism venture.

Figure 2. By courtesy of IED.



IED-owned project, designers: M.Bosa, S.Carta Vasconcellos, A.Cocco

Figure 3. Source blog.tuttotreno.it (2018)



ref. <https://blog.tuttotreno.it/wp-content/uploads/2019/03/Velorail.pdf> retrieved march 2024

(We express our sincere gratitude to Dr. Engineer Gianfranco Damiani for generously allowing us the use of the photograph and for sharing pertinent data regarding the ferrocycle prototype.)

Market and opportunities: The primary audience for the experience we offer is centered around slow tourism, outdoor adventures, and nature exploration. However, it's important to note that our offering is designed to appeal to a broad spectrum of market segments, making it a universal proposition. The real breakthrough lies in the introduction of the ferrocycle to rail tourism. As we will delve into in subsequent sections, this innovative mode of travel has the potential to attract a significant number of tourists not only from Ogliastro but from wider regions as well. Introducing the ferrocycle is expected to drive deseasonalization, fostering economic expansion, particularly in regions like Ogliastro, predominantly recognized for their picturesque coastlines. The forthcoming charts, courtesy of the Sardinia Region Tourist Observatory, illustrate the patterns in tourist arrivals across Sardinia, zooming in on Ogliastro and, more specifically, the municipality of Gairo over the past three years. This data underscores the potential for the ferrocycle to diversify and enrich the tourist appeal of these areas throughout the year. Moreover, The 2022 Sardinia Tourism Report

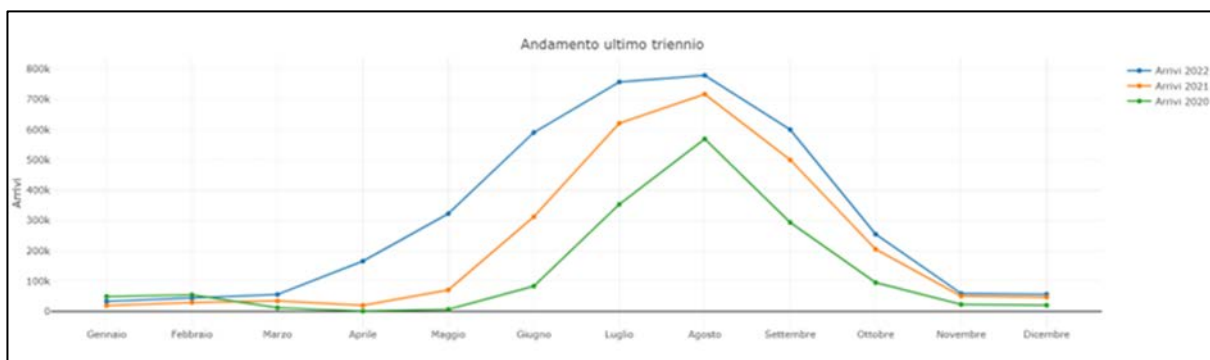
highlights that Nuoro province experienced 598,315 tourist arrivals and 2,896,781 overnight stays, with an average duration of 4.84 nights, predominantly from Italian visitors. Gairo municipality saw 8,130 arrivals and 13,873 stays, with a notable majority of foreign tourists. Projections suggest that introducing the ferrocycle at the Gairo station for the “Gairo - Niala” route could surpass Gairo’s 2022 tourist arrivals by the second year of operation. This anticipated success is attributed to the unique appeal of renting ferrocycles in the province, positioning the Gairo station as a major draw not just locally but also for visitors from nearby areas like Cardedu. The expected increase in visitor flow to the Gairo - Taquisara station is depicted in the accompanying graph, showcasing the station’s potential to boost tourism significantly.

Competitive advantage: Our business model mandates that each station within the tourist railway network, as well as their operating entities, are to be coordinated under the oversight of a Foundation that should involve the municipalities crossed by the railway, the Sardinian Region and the private actors interested to offer local products and services. This arrangement ensures that the ferrocycle service complements, rather than competes with, the already existing Green Train service in region. To achieve harmony and avoid any operational overlap, the usage of rail routes will be meticulously scheduled, ensuring seamless integration between the two services without any interference.

The ferrocycle represents a forward-thinking step into the “slow” and “active” tourism sector, an expanding market niche ripe for competitive differentiation. Our organization will establish its competitive edge through three key factors:

1. **The unique context** The chosen territory boasts distinct features that make it especially appealing to our target audience, providing an ideal backdrop for the ferrocycle experience.
2. **Expert Staffing:** Our team of knowledgeable personnel ensures that visitors will receive high-quality service and an immersive experience, further enhancing the appeal of our offering.
3. **Eco-Friendly and Economical:** The ferrocycle stands out as an entirely eco-sustainable mode of transport, with low maintenance costs. Its design is particularly well-suited to navigate Sardinia’s historic railways, characterized by their “narrow” gauge of 950 mm. This alignment with both environmental sustainability and economic efficiency forms the foundation of our project’s competitive advantage, positioning the ferrocycle as a unique and sustainable choice for exploring Sardinia’s rich heritage.

Figure 4. Source: osservatorio.sardegnaturismo.it



ref. <http://osservatorio.sardegnaturismo.it/it/dashboard/dati-2022>
retrieved march 2024

Management team and Financial and economic previsions: According to our projections, the station’s management team will comprise two key roles: a Station Manager and an Experience Coordinator. The Station Manager will oversee the financial and commercial operations, including accounting, reservations, retail operations, cash flow, performance reporting, and inventory management. The Experience Coordinator will be responsible for the enriching aspects of the service, including organizing guided tours, performing routine maintenance of the ferrocycles, and coordinating events. Supporting these primary roles, we plan to employ up to two seasonal staff members during peak periods to manage increased demand.

The projected income statement illustrates the financial outcomes anticipated from this initiative. Positive financial results are expected by the second year, ensuring the organization’s viability and prosperity. This statement will be dissected to thoroughly examine both revenue streams and cost factors, providing transparency on the calculation methodology employed.

Research limitations. Two principal constraints in our examination of the respective studies are:

The initial study, employing a sample size of over 800 questionnaires, yielded remarkably definitive findings concerning the ferrocycle’s potential. However, this sample predominantly reflects perspectives within the Sardinian context. To enhance the study’s applicability and robustness, it’s recommended to broaden the participant base to include prospective users from beyond this geographic scope.

Regarding the business plan analysis, its primary limitation stems from the relatively narrow focus on a specific route segment. This segment represents only a fraction of the extensive 438 km network of Sardinia’s historic railways as

documented by (ARST, 2019). Future research endeavors would greatly benefit from an all-encompassing study covering the entire network. Such a comprehensive approach could yield a deeper understanding of the opportunities for fostering slow tourism and eco-friendly transportation throughout the region. Expanding the scope of analysis promises valuable insights into the feasibility of scaling the ferrocycle integration and business model across broader regional or even national boundaries.

Managerial implications. This research offers substantial contributions to both the academic discourse and practical implementations, particularly within the domains of slow tourism and sustainable business models. From a theoretical standpoint, it advances the discourse in slow tourism by delineating two key segments: “contemplative” tourism and “active” tourism. This distinction enhances our understanding of visitor engagement and preferences within the context of railway tourism. Furthermore, the study underscores the emergence of a novel vehicle, known in Italian as the “ferrocycle.” It facilitates a deeply immersive and engaging experience for travelers, allowing them to connect intimately with the journey. This model is anchored in the rich cultural heritage of the region’s historical railways, emphasizing the preservation and valorization of cultural heritage as a cornerstone for sustainable tourism practices.

From a managerial standpoint, our research outlines a viable business model that demonstrates how to effectively utilize existing infrastructure by incorporating an innovative transportation method that change it moving the experience from the transport point of view to a one much more immersive cultural, environmental, historical, and territorial grounded. It showcases the potential of transforming traditional tourism practices through strategic partnerships with public administrations, highlighting the benefits of such collaborations in revitalizing neglected or underused infrastructures. This approach not only opens new avenues for business ventures but also emphasizes the importance of synergy between the private sector and public authorities in fostering sustainable development, in a value co-creative perspective.

Furthermore, our findings offer valuable insights for policymakers, advocating for the formulation and implementation of policies that encourage private-public partnerships. It is imperative for the Autonomous Region of Sardinia to legislate on this subject with fidelity to the principles outlined in Law 128/2017, ensuring the law’s integrity is maintained. This means allowing for the development of regional offerings from the grassroots level, thereby empowering local territories to take charge of their own tourism and economic development initiatives. In this context, the proposal to establish a Foundation must adhere to a bottom-up approach. It is critical that such an entity is not formed through top-down directives, nor should it include the railway network’s maintenance service provider in its management. Involving the maintenance service provider could lead to potential conflicts of interest between those tasked with strategic planning and those responsible for operational oversight. This separation ensures that the development of the region’s tourism and cultural heritage can proceed without compromising the objectivity and independence necessary for sustainable growth and innovation.

These policies, aimed at redeveloping and repurposing existing infrastructures, have the dual benefit of stimulating economic growth and enhancing community welfare. By facilitating the integration of eco-friendly transportation options like the ferrocycle into the tourism sector, policy-makers can ensure the sustainable development of tourist attractions that minimize environmental footprints. Consequently, this research underscores the potential of such initiatives to generate value not only for business operators but also for the broader community, by transforming previously neglected areas into vibrant tourist destinations without compromising environmental integrity.

Originality of the paper. This investigation establishes a transformative method to stimulate Sardinia’s legacy rail paths by endorsing the ferrocycle, an innovative vehicle set to redefine the essence of leisurely exploration while foregrounding ecological integrity. The originality of our inquiry lies in the strategic deployment of this entirely green transportation mode. It aims to rejuvenate the disused historical railways of Sardinia, propelling the island into the spotlight as an ideal locale for the contemplative tourism. This maycraft a paradigm of innovation that could encourage similar revivals across Italy.

Moreover, the analysis extends to examining the pivotal role of Law 128/2017 in backing sustainable business endeavors that seek to refurbish ancient railway corridors. The ferrocycle, a wholly sustainable cycling railcar, is at the core of our proposal, designed to marry the conservation of historical sites with the advancement of eco-friendly tourism. The study highlights the ferrocycle’s ability to reenergize Sardinia’s railway infrastructure, enriching the tourist experience with leisurely paced journeys and simultaneously stimulating economic prosperity through the integration of ancillary services. Beyond uncovering the latent potential of Sardinia’s historical rail tracks, and the exploitation of the Law 128/2017 position the ferrocycle as a trailblazing instrument for sustainable progress and innovation in tourism, with far-reaching implications.

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Contributing to Cultural Welfare: A Critical Review of Methods for Measuring the Impact of Culture on Sustainability and Well-being

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Abstract

In the context of increasing attention to cultural value and the value of culture for people and society, this paper provides a narrative critical review of methods for measuring the impact of culture on sustainability and well-being. After clarifying the interconnected and multifaceted concepts of culture, value and measurement, the research critically discusses different methods for grasping and understanding the benefits of culture. Both scientific literature and international documents are thoroughly examined to cluster current tools and models, identify gaps in the current debate on cultural welfare, contribute to theoretical development and provide recommendations for cultural management.

Key words: culture; value; measurement; impact; sustainability; well-being

Framing of the research. *Defining and measuring the value of culture means navigating and disentangling complex and intricate concepts, such as those of culture, value, and measurement.*

First, the overlapping and competing dimensions of culture, including its dual nature, should be recognised: on the one hand, culture refers to a limited set of activities produced by human beings; on the other hand, in a broader sense, it includes everyday activities as a whole in their different facets – social, economic and political ones (MacDowall, 2015, p. 2).

Regarding value, in the current context, its subjective nature is widely accepted. Recognising its extrinsic and relational nature means overcoming the misleading distinction between intrinsic and instrumental value. Indeed, as argued by Montella (2009, 2016), value always requires assessment by an external subject. When evaluating cultural services, value is influenced by the context in which the interaction takes place and depends on the characteristics of the offer and its users – their needs and desires, as well as the resources they have for benefiting from a service (Montella, 2016, pp. 109-110).

Finally, measurement cannot be reduced to the economic-monetary evaluation (Redden, 2015, p. 31). Measuring is a broad and multifaceted activity which entails defining the aspects to be included in the analysis, methods to be adopted, and processes to be implemented to make measurement a valid tool to support cultural management and the sustainability of cultural activities in the long term.

Nowadays, culture has become an essential component of sustainable development (Cicerchia, 2021). It is considered the fourth pillar of sustainability (Culture in Sustainability), a point of convergence with a mediating function between the three traditional pillars (Culture for Sustainability), and a central hub for the other pillars of sustainability, that is, the global dimension of sustainability (Culture as Sustainability) (Soini, Dessein, 2016).

Aiming to measure and monitor the contribution of culture to the national and local implementation of the Goals and Targets of the 2030 Agenda for Sustainable Development, in 2019, UNESCO provided 22 thematic indicators for culture (Culture | 2030 Indicators) divided into four areas:

- 1. Environment and resilience: (1) expenditure on heritage, (2) sustainable management of heritage, (3) climate adaptation and resilience, (4) cultural facilities, (5) open space for culture;*
- 2. Prosperity and livelihoods: (6) culture in GDP, (7) cultural employment, (8) cultural businesses, (9) household expenditure, (10) trade in cultural goods and services, (11) public finance for culture, (12) governance of culture;*
- 3. Knowledge and skills: (13) education for sustainable development, (14) cultural knowledge, (15) multilingual education, (16) cultural and artistic education, (17) cultural training;*
- 4. Inclusion and participation: (18) culture for social cohesion, (19) artistic freedom, (20) access to culture, (21) cultural participation, (22) participatory process.*

Although the dimensions mentioned above represent an overall contribution of culture to sustainability goals, this framework lacks a further step in recognising the close interlink between sustainability and well-being. As O'Mahony (2022) pointed out, even though sustainability and well-being are two global political priorities with various overlaps,

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they remain isolated, and well-being is poorly characterised in sustainability. In this regard, Chapter Six of the World Happiness Report 2020 addressed the connections between sustainable development and human well-being, studying the empirical relationship between the SDGs and subjective well-being using data from the SDG Index and the Gallup World Poll (De Neve, Sachs, 2020).

Due to the numerous interconnections between these concepts, it is crucial to incorporate a sustainability perspective when contemplating human well-being in the cultural sector.

Well-being is a multidimensional concept that encompasses every aspect of the life of individuals and communities. Swarbrick (2006) identified eight dimensions of well-being: physical, spiritual, social, intellectual, emotional/mental, occupational, environmental, and financial. In the current scenario, the close link between well-being and health that we can observe results from the revolution that has transformed the concept and definition of health (Cicerchia, 2022). Indeed, the shift from the bio-medical model to the bio-psycho-social model represents a fundamental change in the way health and illness are understood and approached (Engel, 1977). This model widens the focus, previously centred on purely biological factors, by incorporating psychological and social factors into the understanding of health and illness, highlighting how an individual's well-being depends on all three spheres. Indeed, the concept of health has enlarged its horizons since the World Health Organization (WHO) provided a definition in 1948 that has remained unchanged ever since: "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (WHO, 1948, p. 1). The definition of health rooted within society and culture, influenced by internal and external determinants, together with the salutogenic approach introduced by Antonovsky (1996), provided a new framework to understand and promote factors that contribute to health and well-being. In 2020, WHO added that health and well-being "are influenced by a range of biomedical, psychosocial, social, economic and environmental factors that interconnect across people in differing ways and at different times across the life course" (WHO, 2020, p. 39).

This emerging approach has impacted the evaluation of culture. Thus, when analysing cultural policies and activities promoted by cultural organisations, scholars have devoted increased attention to the impact of culture on the quality of life, health and well-being, as well as on the economy and society at local, national and international levels (McCarthy et al., 2004; Bollo, 2013; Lee, 2013; Scott, 2013; Tuck, Dickinson, 2014; O'Brien, 2015; Cicerchia, 2017a, 2017b, 2022; Crossick, Kaszynska, 2016; OECD, ICOM, 2018; Brown, 2019; Gariboldi, Marconi, 2021).

Moving from the theory to the practice of evaluation, the first issue to define is the field of investigation (what to measure). Indeed, measurement can be applied not only to the effectiveness of public policies at different levels, i.e. European, national, regional and local, but also to the activities carried out by a single organisation or, more specifically, to a single project or activity. Second, it is a matter of how, that is, choosing the methodology, which could be qualitative or quantitative or mixed, also considering difficulties in quantifying dimensions that are not necessarily quantitative. Furthermore, we cannot overlook the effects of measuring. As already argued, not only do numbers matter (Blomkamp, 2015, p. 12), but they have the power to construct understanding of the world (Redden, 2015, p. 29). Another crucial aspect is the need to standardise methodologies to compare data. Finally, we must take into account the reasons for measuring. This issue has become relevant in the context of spending review – and connected austerity measures in using public resources – and evidence-based policy and public management. Thus, measurement has become central for accountability, especially in the case of public policies or activities carried out by public organisations or financed by public expenditure. In addition, it has recently been recognised as an essential tool for promoting cultural welfare.

Purpose of the paper. The paper aims to provide a review of methods for measuring the impact of culture on sustainability and well-being. To achieve this goal, we analysed models for holistic impact assessment, focusing on the tools they offer for measuring the contribution of culture to promoting multidimensional forms of well-being of both communities and individuals. The research critically discusses different methods for grasping and understanding the multifaceted benefits of culture. It seeks to identify the nuances and synergies that emerge when multiple dimensions of impact assessment are considered simultaneously. The analysis intends to identify gaps in the current debate, contribute to theory development and provide recommendations for cultural management.

Moreover, the research investigates if and how these models adopt both a multidimensional approach and a multi-stakeholder perspective, highlighting tools designed for different beneficiaries: cultural and creative organisations, policymakers, individual citizens, or communities. The attention to these specific elements is the basis for the next step of the research, namely the definition of a holistic framework integrating different scientific contributions. This model may be specifically tailored to the evaluation of cultural and creative activities, providing an approach that embeds the principles of cultural welfare into the managerial structure, from design to evaluation. Cultural welfare practices lack a shared impact assessment conceptual framework and model; their evaluation is often limited to spot intervention, missing the opportunity to root this approach in the way an organisation works. In doing so, we aim to contribute to advancing methodologies that capture the intricate interplay between cultural, social, economic, and environmental factors, ultimately promoting a more holistic understanding of the broader impacts of cultural initiatives.

Methodology. The research is developed by adopting a narrative critical review (Green et al., 2006; Ferrari, 2015; Pautasso, 2019). Both scientific literature and international documents were thoroughly examined. In addition to scientific databases such as Scopus, Web of Science and Google Scholar, grey literature was investigated. Even if the narrative review is more likely to introduce bias because it includes only research selected by the authors, in this case, it was preferred because it allowed the authors to include policy documents, green papers and project reports that are not retrieved by academic databases.

Due to the many methods and approaches, navigating this topic can be very challenging. A key contribution to better understanding the geography of impact assessment approaches came from the SoPHIA project and its deliverable 1.2, “Concise Essay mapping existing Gaps, Issues and Problems”.

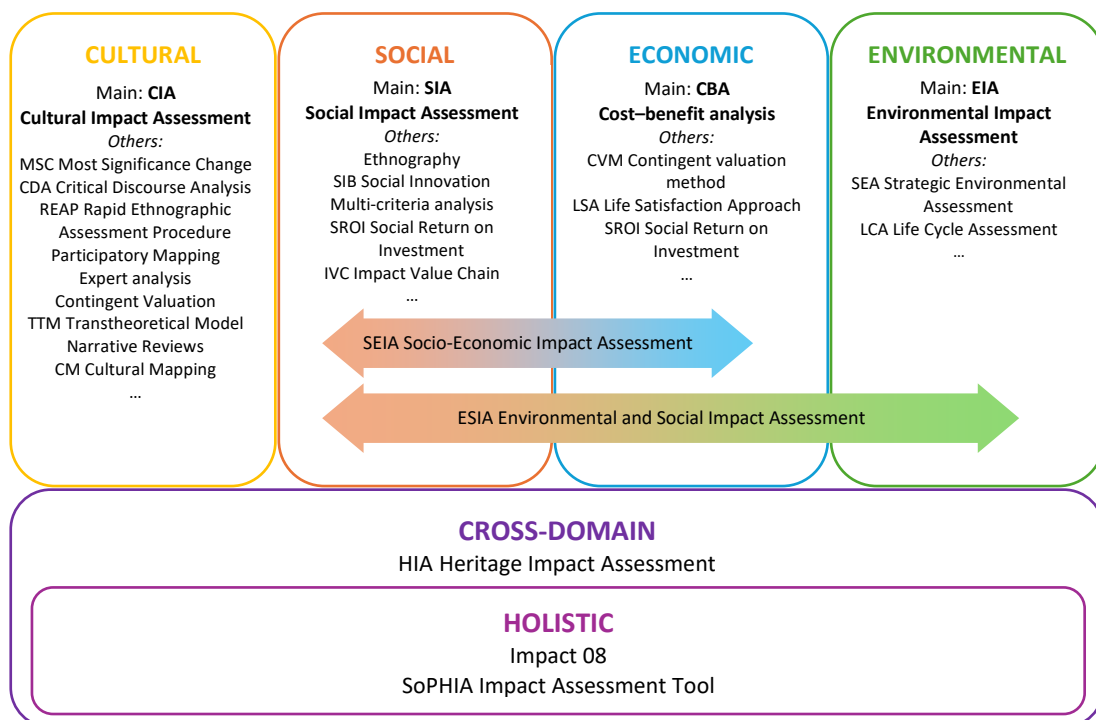
Results. For a long time, impact assessment in the cultural sector has been characterised by a clear, almost impenetrable, delineation of the areas of investigation. Evaluation practices, borrowed from other sectors to the cultural one, were often limited to a single domain – social, cultural, economic, or environmental – losing sight of the interconnections and mutual influences between the different impact spheres of these activities. Consequently, cultural impact has often been evaluated through a narrow lens rather than adopting a holistic framework to understand its effects. In more recent times, evaluation tools designed at the intersection of different areas of investigation have begun to appear, in line with the recommendations provided by Europa Nostra’s report “Cultural Heritage Matters for Europe” (CHCfE Consortium, 2015, pp. 17, 97-102). The report emphasises the importance of adopting a holistic four-domain approach (social, economic, cultural, and environmental) in cultural impact assessment. Indeed, it is based on the recognition of the role of culture as a fourth pillar for sustainable development – together with economic, social, and environmental pillars – as stated in the Hangzhou Declaration “Placing Culture at the Heart of Sustainable Development Policies” (UNESCO, 2013).

Different approaches still populate the constellation of impact assessment, and many of them still adopt a single field “language” to describe phenomena whose impacts are spread in different spheres, such as The Life Satisfaction Approach (LSA). LSA is a quantitative tool developed in economics that provides a monetary evaluation as an output. Through a survey, LSA provides information about respondents’ life satisfaction, their degree of participation and engagement in the arts and cultural activities, and other socio-economic and demographic characteristics of the respondents. Tools such as this do not adopt an integrated and interconnected view and do not align with the holistic framework.

Aiming to fill this gap, the already mentioned SoPHIA’s deliverable “A concise essay mapping existing gaps, issues, and problems” (2020) provided an overview of tools and methods developed in four domains: social, cultural, environmental, and economic. A total of 42 different methods were collected. To comprehend the distribution of these methods, here is an overview of their allocation based on their respective domains: 14 in cultural, 24 in social, 4 in economic, 3 in environmental, and 4 are related to two or more domains.

In particular, among these 42 methods, 6 are used in two different domains, but they are characterised by a single-field approach (e.g. economic methods applied to the social dimension, such as SROI – Social Return on Investment, which is present in both social and economic domains), 2 of them are classified as attempts to create synergies between methods of two domains (i.e. SEIA – Socio-Economic Impact Assessment and ESIA – Environmental and Social Impact Assessment), and finally 2 of them are labelled as cross-domain methods, namely HIA – Heritage Impact Assessment and Impact 08 (Fig. 1).

Fig. 1: Impact Assessment Methods divided by domain (own elaboration based on the initial classification provided by SoPHIA Project, 2020)



Our analysis is still ongoing, but some first considerations can be made focusing on those methods highlighted as cross-domains, i.e. HIA and Impact 08, in addition to SoPHIA Holistic Impact Assessment Tool.

Even if HIA and Impact 08 are both identified as cross-domain, HIA does not provide a comprehensive approach to assess the impact of culture across all dimensions of society. As pointed out by Ashrafi et al. (2021a, 2021b), HIA has been developed by ICOMOS within the framework of EIA – Environmental Impact Assessment, to measure the potential impact of a proposed development on cultural and historical resources, such as archaeological sites, historical buildings, or cultural landscapes – with specific recommendations to mitigate any negative impacts (ICOMOS, 2011). It is also worth mentioning that HIA is increasingly required to analyse the possible effects and consequences of development on the Outstanding Universal Value (OUV) of World Heritage Sites. Indeed, the very vocation of the “HIA Guidance” developed by ICOMOS (2011) is to provide a methodology for assessing the potential impact of a change or development on OUV attributes as part of a broader EIA process. This characteristic means that it often refers to a well-defined and delimited area of action, UNESCO sites, making its application in other contexts challenging and often inappropriate. Furthermore, this method does not offer useful tools to investigate the impact of culture on well-being. Indeed, this example shows a common obstacle when addressing the topic of cultural impact assessment, namely the risk of encountering tools that assess the impacts of a proposed development on cultural heritage. As a result, this tool can provide information only limited to the enhancement and conservation activity of the site under analysis as it focuses on safeguarding cultural heritage rather than on the impacts it may have on the society that hosts it.

The second cross-domain method is Impact 08, a holistic longitudinal impact analysis. It was successfully used to assess the economic impacts of Liverpool European Capital of Culture (ECoC) 2008 (Garcia et al. 2008, 2010). Impact 08 developed a holistic approach by focusing on five areas: 1) cultural access and participation; 2) economy and tourism; 3) cultural vibrancy and sustainability; 4) image and perception; 5) governance and delivery process. As pointed out by Baioni et al. (2021, p. 15), Impact 08 has been able to incorporate policy objectives and address the different imperatives relevant to cultural intervention in each sector analysed. Beyond quantitative metrics, Impact 08 adopted qualitative methods, considering the lived experience of residents as an essential component of the study and providing insights about positive and negative aspects from residents’ perspectives. What emerges is that the tool’s nature, that is, being designed to evaluate Liverpool’s experience as ECoC, weakens the holistic approach of the evaluation. Indeed, due to the context in which it took shape, this assessment paid strong attention to outputs, particularly visitor flows and tourism, and demonstrated a slight concern for sustainable development issues in the city. The report provides insights on dimensions related to human well-being (e.g., occupational well-being, cultural engagement and participation, sense of belonging, local identity), but fails to mention environmental impacts directly. Overall, this example contributes fundamentally to introducing the holistic approach in the sector. However, it is important to note that it was developed and designed specifically for an exceptional event such as ECoC. Therefore, it is more appropriate to measure the impact of similar events on an urban scale rather than to evaluate the impact of culture in other production contexts and on different geographical scales.

Finally, the Holistic Impact Assessment Model proposed by SoPHIA represents a key contribution to spreading a holistic approach in the cultural field. SoPHIA Social Platform for Holistic Heritage Impact Assessment is a project funded by the European Commission under the H2020 work program (2018-2020) to develop a holistic, multi-domain, and intersectoral impact assessment model to evaluate interventions on cultural heritage (Baioni, 2021). The SoPHIA model is not a “ready to use” tool that can be applied universally; instead, it is a “conceptual model” that must be transformed and customised into an operational framework (Arif et al., 2021, pp. 87-88). What makes this tool valuable is the role that it assigns to the indicators and qualitative measures collected. They are organised according to domains and subdomains, but their contribution is not limited to the area of affiliation; instead, they are helpful in evaluating transversal aspects of key issues. In addition, the model differs from other impact assessments as it adapts to the analysis needs of three categories: policymakers (from local to European level), managers and practitioners, and institutional observers and independent researchers (SoPHIA, 2021). SoPHIA model adopts an approach developed on three axes: 1) domains, represented by issues organised by themes and interconnected subthemes; 2) people, divided between promoters of the assessment and stakeholders involved in the evaluation process (e.g., policymakers, local communities, civic society); 3) time, represented by the balance between current need and legacy but also related to the moment in which the assessment happens (ex-ante; on-going; ex-post) (Arif et al. 2021, pp. 77; Baioni et al. 2021, pp. 17-20).

The multi-domain axis encompasses six different themes – further divided into subthemes, for a total of 28 – in which a cultural intervention can potentially impact. They are organised as: 1) social capital and governance; 2) identity of place; 3) quality of life; 4) education, creativity, and innovation; 5) work and prosperity; 6) protection. Themes and sub-themes are described, along with their cross-cutting issues and counter-effects. The assessment is developed thanks to quantitative indicators, and the perspective of people – direct beneficiaries and workers engaged in the implementation of the initiative – on the intervention’s quality (Arif et al. 2021, p. 75).

As Arif et al. (2021) pointed out, the repetition of indicators among themes and subthemes was an obstacle to the development of the model, which caused redundancy. This issue was addressed through the testing phase by implementing a clear differentiation of themes and subthemes. Topics affected by this phenomenon more often were those related to social capital, prosperity and attractiveness, and well-being (Arif et al. 2021, p. 71).

One of the main holistic features of this tool is the ability to show interconnections between various areas thanks to cross-cutting issues and counter-effects described for each sub-theme. The theme of Quality of Life, originally named Well-being/Quality of Life (Ioannou, 2021), was a privileged viewpoint to observe counter-effects; for this reason, it has been lightened, leaving the dimension of well-being in the dimension of counter-effects.

Research limitations. *The research is theoretical since it analyses and discusses pre-existing theories, methods and models. The research focuses mainly on holistic tools, not the various methods that populate the impact assessment universe. Moreover, the analysis is still in progress. Its further development entails a thorough analysis of the impact assessment methods under investigation to develop an original holistic framework for measuring the impact of culture on sustainability and well-being.*

Managerial implications. *The analysis suggested by the research could be a valuable resource for cultural management and policymaking. The review provides cultural managers with a set of approaches and tools that could be applied to the cultural sector. By critically discussing them, the research also guides cultural organisations in defining their measuring methods and instruments.*

The paper recommends integrating a holistic perspective into managerial practices to achieve more sustainable and well-being-oriented outcomes. It emphasises the importance of a comprehensive approach that considers the diverse dimensions of culture and provides practical insights to enhance cultural impacts. Indeed, the interconnected and multifaceted nature of culture, highlighted in the paper, calls for interdisciplinary collaboration within organisations between cultural experts, sustainability professionals and well-being specialists to develop holistic strategies guided by the integrated cultural welfare approach.

Originality of the paper. *The paper provides a comprehensive overview that helps understand and evaluate the benefits of culture. To the best of our knowledge, even if studies have provided a variety of models and tools, an analysis of holistic methods under the lens of the contribution of culture to sustainability and well-being has never been carried out. The analysis developed within the paper could help identify trends, overlaps, and gaps in the current debate about holistic approaches.*

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Tourism in Smart City policy: an opportunity for Urban Sustainability

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Abstract

Previous studies show that the tourism sector, often remains separated from smart city projects if not to enhance the attractiveness of a city within the smart living dimension. This separation disregards the overlapping presence of tourists and residents in many city services and infrastructures which can aggravate urban challenges such as overcrowding, pollution, and waste management, endangering the effectiveness of smart city projects aiming to enhance the quality of life of inhabitants while considering the potential impact on natural resources. Therefore, there is a need for tourism to be seen as an interrelated system rather than a mere economic activity so that its impact on city resources and infrastructures can be properly addressed. To this end, this study aims to fill this gap by investigating the role of tourism in multiple smart city projects and the potential sustainability outcomes deriving from the integration. We conduct a discourse analysis focusing on 24 smart city projects that integrate tourism in the Belgium context which allows us to unveil the expected sustainability outcomes of integrating tourism in other smart city dimensions such as smart mobility, smart governance and smart environment. In addition, with this research we contribute in the development of proactive instead of reactive tourism management policies. Finally, we also contribute to a better understanding of how many dimensions of a smart city are impacted by tourism and how this impact whether present or potential can be addressed with benefits to the community and the tourist.

Key words: smart cities, tourism, integration, urban sustainability

Framing of the research. *Urban tourism has positive and negative effects on cities (Tsaour et al., 2018). It positively contributes to economic growth and it can negatively affect the quality of life in the city if its impact is not appropriately addressed. Indeed, an inadequate tourism management can lead to aggravate city challenges such as overcrowding, congestion, over-commercialization, and damage to natural resources and heritage sites, leading to environmental degradation and social issues (Postma & Schmuecker, 2017; Tsaour et al., 2018).*

Integrating tourism into urban development strategies is crucial for creating sustainable urban environments. Smart city policies and ICT innovations offer avenues for balancing economic benefits with environmental and social considerations. However, current approaches to tourism in smart cities tend to be reactive, addressing immediate issues like overtourism, rather than using smart tourism projects as a tool for long-term sustainable urban planning (Torres-Delgado & Font, 2024).

Therefore, there is a need for tourism to be seen as an interrelated system within a larger living system rather than a mere economic activity so that its impact on city resources and infrastructures can be properly addressed (Jamroozi, 2007). Indeed, this separation disregards the overlapping presence of tourists and residents in many city services and infrastructures. As a matter of fact, poor management of a tourism system can aggravate urban challenges such as overcrowding, pollution, and waste management, endangering the successful achievement of smart city project goals (Tsaour et al., 2018; Margherita et al., 2023).

To this end, in this research we first provide definitions regarding the concepts of smart city, smart tourism, and urban sustainability to develop the conceptual model that we will use for the empirical analysis of how tourism is integrated in smart city projects for urban sustainability in the empirical context of Belgium.

The smart city framework includes six dimensions developed to support the four pillars that are the basis of smart cities, namely, institutional infrastructure, physical infrastructure, social infrastructure, and economic infrastructure (Bibri, 2018; Sharif & Pokharel, 2022). These six dimensions are the smart economy, smart living, smart governance, smart environment, smart mobility, and smart people (Giffinger et al., 2007): Smart economy is defined as competitiveness, innovation, use of information and communication technologies in the overall aspect of the economy

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(Arroub et al., 2016). Smart Governance is coordination between citizens and administrative institutions and a successful governance can help to achieve maximum benefits of smart cities in terms of reliability, efficiency, and effectiveness of citizens' services by integrating public, private, and civil officialdoms (Sharif & Pokharel, 2022; Silva et al., 2018). The Smart Mobility dimension consists of developing a modern and sustainable transport system throughout the territory, adapted to the needs of all users (citizens, workers, tourists, etc.) (Smart City Institute, 2021). The Smart Environment dimension refers to the use and management of natural and heritage resources in a more thoughtful and sustainable manner (Smart City Institute, 2021), including "waste discarding, pollution control, energy management, smart grids, and house and facility management, quality of air and water, increases in green spaces, and monitoring emissions" (Al Sharif & Pokharel, 2022, p. 5). The Smart People dimension refers to the development of a more inclusive society that offers equal treatment in the development of human capital, namely the ability and proficiencies of a person or a group, and social capital, which is the number and quality of relations connecting social organizations (Al Sharif & Pokharel, 2022). Finally, the smart living dimension refers to the enhancement of the quality of life for citizens and encompasses several aspects of urban life, namely, health, city safety, tourism attractiveness, social cohesion (Smart City Institute, 2021; Attaran et al., 2022).

Smart city research recognized tourism as an influential part of the Smart Living Dimension of Smart City (Giffinger et al., 2007; La Rocca, 2013). However, tourism's impact covers much more than this dimension as it can affect many subsystems of a city from its transportation systems to its waste management systems to its economic system. Therefore, as explained by La Rocca (2014), analyzing tourism as a part of the Smart Living dimension risks overlooking the impact of the sector on all other smart city dimensions.

Smart tourism is defined as tourism supported by integrated efforts at a destination to collect and aggregate/harness data derived from physical infrastructure, social connections, government/organizational sources, and human bodies/minds in combination with the use of advanced technologies to transform that data into on-site experiences and business value-propositions with a clear focus on efficiency, sustainability, and experience enrichment. Smart tourism is based on three components: Smart Experience, Smart Business Ecosystem, and Smart Destination. The smart experience component specifically focuses on technology-mediated tourism experiences and their enhancement through personalization, context-awareness, and real-time monitoring (Buhalis and Amaranggana 2015). Neuhofer et al. (2015) identify information aggregation, ubiquitous connectedness, and real-time synchronization as the major drivers of such smart tourism experiences. The smart tourism experience is efficient and rich in meaning. Tourists are active participants in its creation. They not only consume but also create, annotate, or otherwise enhance data that constitutes the basis of the experience (e.g., by uploading photos to Instagram with destination-related hashtags or helping map toilets at destinations). Smart tourists and their digital selves (or data bodies) use smartphones to tap into information infrastructures provided at the destination or virtually to add value to their experiences. The smart business ecosystem refers to the complex business ecosystem that creates and supports the exchange of touristic resources and the co-creation of the tourism experience. Buhalis and Amaranggana (2014) describe the business component of smart tourism as being characterized by dynamically interconnected stakeholders, the digitalization of core business processes, and organizational agility. A distinct aspect of this smart business component is that it includes public-private collaboration to an extent that is unusual and results from governments becoming more open and technology-focused as providers of infrastructure and data. In addition, smart tourism recognizes that consumers can also create and offer value as well as monitor and therefore take on business or governance roles. Smart destinations are defined as special cases of smart cities: they apply smart city principles to urban or rural areas and not only consider residents but also tourists in their efforts to support mobility, resource availability and allocation, sustainability, and quality of life/visits (Gretzel et al., 2015). Another definition is provided by Lopez de Avila (2015) defines the smart tourism destination as: an innovative tourist destination, built on an infrastructure of state-of-the-art technology guaranteeing the sustainable development of tourist areas, accessible to everyone, which facilitates the visitor's interaction with and integration into his or her surroundings, increases the quality of the experience at the destination, and improves residents' quality of life. Finally, smart tourism spans three layers across these three components: a smart information layer that aims at collecting data; a smart exchange layer that supports interconnectivity; and a smart processing layer that is responsible for the analysis, visualization, integration, and intelligent use of data (Gretzel et al., 2015).

The last concept we define is sustainability generally defined and in relationship with tourism.

Sustainability is defined by the Brundtland report as a form of economic development that "meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987, p. 43). In the context of urban settlements, sustainability is defined by Hiremath et al. (2013) as reaching balance in developing an urban area and protecting its environment, keeping "an eye to equity in income, employment, shelter, basic services, social infrastructure, and transportation in the urban areas" (Hiremath et al., 2013, p. 2). Following Margherita et al. (2023), our study defines urban sustainability using the comprehensive framework of the triple bottom line, which involves three dimensions to support, namely, economic, social, and environmental. The economic dimension refers to developing a city context able to guarantee long-term economic growth that fairly distributes socio-economic benefits among a city's stakeholders (Michael et al., 2014). The environmental dimension refers to developing a city context that makes optimal use of environmental resources, protects essential ecological processes, and helps to conserve natural heritage and biodiversity (Michael et al., 2014). Finally, the social dimension entails addressing the needs of citizens to improve the quality of life. It embraces the notions of equal opportunity for people's development, respect for the community's socio-cultural authenticity, and preservation of cultural heritage. It also includes the notion of community empowerment, whereby citizens increase control over their lives by accessing public information and facilities (OECD, 2004).

Given that our study considers the integration of a tourism system in a smart city, it is important to provide a definition of sustainable tourism to understand how it aligns with urban sustainability.

UNWTO recommends that to assess sustainable tourism, it is imperative to use the three pillars of sustainability: environmental, economic, and socio-cultural (UNWTO, 2004). The environmental pillar refers to the optimal use of environmental resources by tourism stakeholders that constitute a crucial element in tourism development but also to maintain essential ecological processes and help the conservation of natural heritage as well as biodiversity. The socio-cultural pillar of sustainable tourism refers to the consideration and respect of the socio-cultural authenticity of host communities, conservation of their cultural heritage and traditional values as well as contribution to intercultural understanding and tolerance (Escobar & Margherita, 2021).

Finally, the economic pillar refers to the capability of tourism businesses to ensure feasible, long-term economic growth by providing socio-economic benefits distributed among all stakeholders in a fair manner. This includes securing employment, income-earning opportunities, as well as a contribution to poverty alleviation. In addition, it refers to the ability to maintain a high level of tourist satisfaction by ensuring a meaningful experience to the tourist (UNWTO, 2004).

Based on these concepts, we developed a conceptual model that allows us to analyze the phenomenon.

Purpose of the paper. This study aims to investigate the role of tourism in multiple smart city projects guided by the following research question: how do smart cities envision the integration of tourism and its impact through smart urban technologies to support urban sustainability?

Methodology. We conduct a discourse analysis focusing on 24 smart city projects that integrate tourism in the Belgium context with an assessment of the expected sustainability outcomes of integration. We explore the integration of tourism into smart city projects aimed at fostering urban sustainability within the empirical context of Belgium. We conducted a qualitative discourse analysis of project proposals submitted to the Smart Territory call for projects in the Wallonia region in 2019. Belgium was selected for analysis due to its prominent position among European Union countries in smart city development (European Commission, 2018).

The analysis of the project texts employed a combination of inductive and deductive methods. Initially, we followed an inductive approach and conducted a thematic analysis of both the introductory summaries of the project texts and the responses to question 46. This allowed us to categorize projects based on commonalities regarding the proposed smart tourism initiatives. Subsequently, we employed deductive analysis, drawing on the theoretical categories outlined in our conceptual model.

Our deductive analysis focused on several key aspects:

1. **Data Use:** We examined how data was utilized within the projects, including its collection, processing, and exchange. This provided insights into the technological infrastructure and data-driven approaches underpinning the proposed smart tourism initiatives.
2. **Typology of Smart Tourism Initiatives:** We categorized the smart tourism initiatives into three types: smart experience, smart business ecosystem, and smart destination following Gretzel (2015). This classification helped elucidate the specific focus and objectives of each initiative.
3. **Smart City Framework Integration:** We analyzed how each smart tourism initiative was integrated within the broader smart city framework. Specifically, we looked at alignment with the dimensions of smart economy, smart living, smart governance, smart environment, smart mobility, and smart people. This assessment provided context regarding the strategic positioning of the initiatives within the overall urban development strategy.
4. **Envisaged Sustainability Impact:** Finally, we evaluated the anticipated sustainability impact of the smart tourism initiatives across environmental, social, and economic dimensions. This analysis shed light on the potential benefits and outcomes expected from the implementation of these initiatives in terms of urban sustainability.

By systematically analyzing these dimensions, we gained a comprehensive understanding of how smart tourism projects were conceptualized and planned within the context of smart city development in Belgium. This approach enabled us to identify patterns, trends, and areas of innovation, contributing valuable insights to the study of urban sustainability and smart tourism integration.

Results. Preliminary findings show how different smart city policies integrate tourism in projects that support more than just the smart living dimension which acknowledges the tourism system impact on mobility, waste management, energy efficiency and so on. In addition, with this research we show examples of proactive policy making that can inspire policy makers around the world to address current issues related to tourism development and prevent future ones to enhance the livability of cities. We also show the importance of considering tourism institutions and stakeholders in the envisioning phase of smart city policy as in some of these projects they were crucial to understand the tourism products, receive information on current challenges and conflict with residents but also to understand what the resident wants to share with the tourist about the city. Finally, with this research we contribute to the tourism reset literature that advocates for tourism as a tool for community development that avoids perpetuating unsustainable tourism development strategies and shift towards those strategies that develop tourism with a consideration of the its impact on the destination and its inhabitants (Higgins-Desbiolles et al., 2019; Jamrozy, 2007; Sharpley, 2020; Sigala, 2020).

Research limitations. Future research could enlarge the sample of smart city projects given that our research focuses solely on the case of smart city projects in Belgium.

Managerial implications. This research has implications for policy makers as it shows cases of smart cities that integrate the current and potential tourism impact in their strategies and the outcomes for urban sustainability. Policy

makers can use this research as a useful tool to understand the value of developing inclusive smart city strategies that consider tourism.

Originality of the paper. We propose a comprehensive model that explores how municipal administrations plan to incorporate tourism into smart city initiatives to drive sustainability impacts. Our model outlines a framework where municipalities leverage data collection, processing, and exchange capabilities to implement three distinct types of smart tourism initiatives: smart experience, smart business ecosystem, and smart destination. These smart tourism initiatives are strategically integrated into the broader smart city framework, aligning with one or more of the six dimensions outlined by Giffinger (2007): smart economy, smart living, smart governance, smart environment, smart mobility, and smart people. This integration allows for a synergistic approach, where tourism initiatives are seamlessly embedded within existing smart city infrastructure and initiatives. The ultimate goal of this model is to enhance urban sustainability across multiple dimensions of the triple bottom line: environmental, social, and economic. By strategically aligning tourism initiatives with smart city dimensions, municipalities aim to achieve tangible sustainability outcomes while simultaneously enhancing the overall tourism experience and economic prosperity of the city.

With this research we contribute in the development of proactive instead of reactive tourism management policies (McLoughlin et al., 2023). We also contribute to a better understanding of how many dimensions of a smart city are impacted by tourism and how this impact whether present or potential can be addressed with benefits to the community and the tourist.

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Transnational collaborations for a more sustainable tourism: the role of digital transition

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Abstract

Digital transformation provides opportunities for sustainable tourism development, through the forecast and mitigation of negative tourism impacts (e.g., overtourism), the involvement of all stakeholders, including residents, in the decision making, and the systematic collection and sharing of tourism data. Digital transformation also facilitates collaboration among different structures, which is also fundamental for sustainable tourism. This ongoing study considers a transnational cooperation structure in order to understand how digital transition can facilitate collaboration among different actors and structures in different destinations in terms of sustainability decisions. To this extent, a longitudinal qualitative study has been developed at different levels of analysis (namely, regional/province level, destination level, municipality level) and at different points in time. At the higher level of analysis (the regional level), three in-depth semi-structured interviews have been conducted with key managers of the regional DMOs of the three regions involved in the study. Results show a fragmented situation at the regional level: even though issues of digital transformation, systematic collection and processing of tourism data, as well as transition towards a more sustainable tourism development are deemed important, there is no systematic collaboration among the three regions, except for few consolidated tourism projects. At a lower level of analysis, the study attempts to collect semi-structured interviews with public and private key stakeholders of the selected destinations and municipalities in order to provide a more nuanced and in-depth understanding of the phenomenon. This research will contribute to sustainable tourism literature, as well as digitalization and collaboration studies in tourism, in that it first considers a transnational collaboration structure.

Key words: digital transition; sustainable tourism development; overtourism; collaboration; transnational cooperation structure

Framing of the research. Destination management has been the object of attention of tourism research for a long time now (Beritelli et al., 2014). Recent research has re-defined the roles and responsibilities of destination management in terms of sustainable tourism development, empowerment of local actors, including equal distribution of benefits and costs among different stakeholders, balance of the tourism flows, measurement and tracking of tourism behaviors (Reinhold et al., 2023). Moreover, destination management aims to oversee the processes of development of a tourism offer from the structural and infrastructural point of view (Luštický & Štumpf, 2021). This means that destination management is not only responsible for the development of the tourism product but to some extent for improving infrastructures in the destination, both they physical ones, e.g. transportation and mobility, and the digital ones, e.g. technology for data collection (Luštický & Štumpf, 2021; Reinhold et al., 2023).

Digital transformation has been defined as “a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies” (Vial, 2019, p. 118). Digital transformation is a fundamental process not only for firms and enterprises, but also for a whole industry like the tourism industry. Previous studies prove that digital transformation positively impacts the tourism industry in terms of value creation (Ozdemir et al., 2023), better financial performance (Suder et al., 2022), competitive advantage (Gutiérrez et al., 2023), connectivity (Dickinson et al., 2017), prediction of tourism demand (Zhang et al., 2020) and of tourism arrivals (Höpken et al., 2020). Moreover, successful destination management often relies on the integration of technology into organizational structures (Sorokina et al., 2022).

Digital transformation aids the sustainable development of a tourism ecosystem. Previous studies have started to indicate a positive relationship between digital transformation and the sustainable tourism development of a tourism ecosystem (Gössling, 2021). For instance, technology has been seen as useful in mitigating and managing negative tourism impacts (Ali & Frew, 2013; Schönherr et al., 2023). Dickinson et al. (2017) argue that mobile connectivity

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enhanced a more bottom-up approach aimed at co-creating experiences, ideas, and resources. Similarly, digital technologies in smart cities also aim to create sustainable and meaningful connections between tourists and the destination (Li et al., 2017). Moreover, the sharing and common management of data and information among local structures (ElMassah & Mohieldin, 2020) can have positive consequences for the management of tourism mobility caused by overtourism that can lead to congestion and overcrowding, as well as for the spreading of tourism flows and the relationship with online booking platforms. Finally, digital transformation also has an enabling role for organizational learning with the aim of driving territories and destinations toward more sustainable development (Schönherr et al., 2023). Destination management is responsible for coordinating the various elements that constitute a destination (UNWTO, 2020; Zhang & Blasco, 2022). The collaborations among the various private and public tourism stakeholders can be promoted through digital transformation, utilizing digital technologies to manage guest flows, providing online mobility options, and conducting campaigns to raise environmental awareness, ultimately mitigating the negative tourism impacts (Schönherr et al., 2023).

Sustainability literature highlighted the role of external collaborative dynamics as pivotal mechanisms to enhance sustainability-oriented behaviors and strategies (Sharma and Henriques, 2005). In the selected case, destinations can be seen also as competitors for their touristic offer (Zainal-Abidin et al., 2023). Therefore, in the selected context, destinations' collaborative strategies can be better understood by using the lenses of sustainability-oriented co-competition strategies. Co-competition is defined by Bengtsson and Kock (2000, p. 411) as "a dynamic and paradoxical relationship, which arises when two companies [or entities, n.d.r.] cooperate in some areas (such as strategic alliances), but simultaneously compete in other areas".

Therefore, the present study aims to go in depth in the understanding of sustainability-oriented co-competition initiatives developed in the touristic sector among the Trentino-South Tyrol-Tyrol (Italy and Austria) Euregio ecosystem's regions. By examining the collaborative dynamics and co-competitive strategies within the three selected destinations, this ongoing study aims to shed light on how they navigate the balance between cooperation and competition, crucial for fostering sustainable practices and enhancing their tourism offerings, and on the role of digital transformation in this.

Purpose of the paper. Whereas previous studies have mainly explored the impact of digital transformation on collaboration within specific sectors, such as tourism Small and Medium Enterprises (SMEs) (Xiao et al, 2017), the hospitality industry (Busulwa et al., 2022; Lam & Law, 2019; Suder et al., 2022), and Destination Management Organizations (DMOs) (Schönherr et al., 2023; Zainal-Abidin et al., 2023), no study, to the best of our knowledge, has considered a transnational cooperation structure. Moreover, there is still not a clear understanding of the role of digital transformation in collaboration among tourism destinations across different countries.

With a focus on the Trentino - South Tyrol - Tyrol Euregio Region, this study aims to fill that gap by considering the role of digital transformation in determining successful collaboration among DMOs, and other local structures, towards a more sustainable tourism development.

This ongoing research aims to explore the role of a transnational cooperation structure, like the Euregio, in the management and decision-making of local destination management, especially on issues related to sustainable tourism development, such as overtourism. In particular, the focus is on digital transformation as a potential facilitator of coordination in that it can provide a common ecosystem to manage those issues and improve the decision making.

The study aims to answer the following research questions:

- How does a transnational cooperation structure, like the Euregio, impact the local decisions of tourism management?
- To what extent does digital transformation contribute to collaboration (regarding sharing and management of data and information) among tourism areas in a transnational cooperation structure to achieve more sustainable tourism development?

Methodology. In order to answer the research question, our contribution develops a qualitative longitudinal study combining different levels of analysis (namely, province/ regional level, destination level, municipality level) at different points in time. While qualitative methodology allows for an in-depth insight into the phenomenon studied, the multi-level perspective (Geels, 2004) represents an ordering framework that could be useful to observe longitudinal dynamics such as sustainable transitions of territories.

The context of the study is the Trentino - South Tyrol - Tyrol Euregio region. The Euregio regions are transnational cooperation structures located between territories located in two (or more) European countries. Specifically, the Trentino - South Tyrol - Tyrol Euregio region is located between Northern Italy and Southern Austria and was established in 1998. The borders of this Euregio region correspond to the former County of Tyrol, before the territory was divided in 1919 after World War I. Trentino and South Tyrol are two Autonomous Provinces in Northern Italy, whereas Tyrol is located in Eastern Austria. The region is characterized by a mountainous landscape, where tourism is a major industry. In 2022, overnight stays were 17,8 million in the Autonomous Province of Trento (ISPAT, 2024), 34,4 million in the Autonomous Province of Bolzano/Bozen in Italy (ASTAT, 2024), and 43,4 million for the tourism year 2021/2022 in Tyrol, in Austria (Land Tirol, 2024). In fact, the Trentino - South Tyrol - Tyrol Euregio region is responsible for cooperation in fields such as tourism, mobility, infrastructure, social services, as well as environmental issues (for further information: europaregion.info)

The Trentino - South Tyrol - Tyrol Euregio region has been deemed ideal to answer the research questions since the institutional relationships among the local organizations that contribute to creating, play a pivotal role in shaping and influencing decisions regarding destination management.

The study's methodology builds on a qualitative longitudinal study. At the higher level of analysis (the province/ regional level), three semi-structured interviews were conducted with the key managers of the three DMOs representing

each Euregio region. Interviewees were recruited by email by one of the researchers of the team. The targeted informants of the Euregio Ecosystem were the Manager of Corporate and Internal Communications of Trentino Marketing (Trentino Marketing), the Manager of Alto Adige Tourism Organization (IDM Südtirol), the Manager of Tyrol Tourism Organization (Tirol Werbung).

Interviews were conducted in-person between October 2022 and February 2023. They lasted approximately 65 minutes. One interview was held in English, the other two were held in Italian and then translated into English. Interviews were analyzed following the Goia methodology, identifying first-order codes, second-order categories and aggregate dimensions (Goia et al., 2013).

At a lower level of analysis, the study aims to provide a more in-depth understanding of the themes that emerged at the province/regional level. Therefore, semi-structured interviews with key stakeholders of the selected destinations and municipalities will be conducted. The targeted informants will be: Managers of the sub-destinations (APT Val di Fassa, APT Dolomiti Paganella, APT Valsugana, APT Dolomiti), Manager of each destination's tourism organizations, Key policymakers, Spokespersons of the Key touristic associations.

Preliminary results. Preliminary results show that each destination in the Trentino - South Tyrol - Tyrol Euregio region is collaborating locally with their stakeholders to develop innovative digital platforms able to process large amounts of data concerning touristic flows. All the different destinations are restructuring their internal organizations to face the forthcoming challenges related to sustainability (climate change effects on destinations, lower number of employees in the touristic sector, residents' consensus on touristic policies, transport, overtourism, etc). Moreover, besides the fact that each of the three destinations is involving all the stakeholders of their region to find new innovative ways to face the sustainability-oriented challenges, the potential of the Euregio transnational structure seems still under-exploited.

Preliminary results show that each destination is collaborating locally with its stakeholders to develop innovative digital platforms able to process large amount of data concerning touristic flows, as exemplified by the quotes below:

“The guest card is one of the largest projects that we developed. In South Tyrol the guest card started with mobility, then we added museums. Over time it was enriched by local services. Now has been proposed a new model of guest card, that we want to uniform for all the South Tyrolean realities. With the resulting data we would like to create a platform on which tourists can also shop as well as share information. This data will be used to aggregate the forces to face sustainability-related issues.” (IDM Südtirol)

“We have many different cards, free ones or others to buy, and we don't want to change them because everyone worked out their own concept and they are working in their destination. I can add the local card from the valley X, from the valley Y, or from Innsbruck to this (main) card so then you have also the local experiences which are included in the local card and the destination card will add on the other cards. The idea is to start implementing this project with the public transport” (Tirol Werbung)

Despite this effort in collecting and processing large amount of data to control sustainability-related issues, preliminary results show that all the three different regions have difficulties in sharing their platform's data with the other regions at the Euregio level.

“We have to focus on sustainability at a cross-sectoral level, we must take steps together and move forward by doing small steps. [...] We have a lot of data, but a sharing at the Euregio level is more a political issue that is now outside of our management, because we are a very large company which uses this data, especially with territorial companies” (IDM Südtirol)

“The consultation with the other players in the Euregio ecosystem is a little more difficult, in the sense that there are some projects that are very good. For example, the Tour of the Alps is a really effective project that works very well with the other two actors (i.e. South Tyrol and Tyrol). It happens only when there is a very specific project. For the future, our goal is also to share data, experiences and promotions with these realities. We are trying to work also on sustainability but it is not easy, I have to be very honest because all three regions have agencies like Trentino Marketing that mainly have the goal of working for their region.” (Trentino Marketing)

Moreover, all the different destinations are modifying their internal organizational structure (e.g., by appointing new roles or funding new departments). The restructuring aims to enhance the destinations in facing the forthcoming challenges related to sustainability such as the climate change effects on destinations, the effects of overtourism, the lower number of employees available in the touristic sector, the pressure of residents regarding touristic and transports policies.

“We are conducting a re-organization of your company around sustainability. For example, we have just hired a person who works for the whole topic of social sustainability and of the whole topic of missing employees. We want to analyze how we can build up tools and business in hotels with less employees in the future.” (Tirol Werbung)

Indeed, our findings show that the coopetition initiatives among the regions are marginal and still limited to specific tourism projects that are particularly successful, such as the Tour of the Alps, a biking race held across the Trentino - South Tyrol - Tyrol Euregio region.

Research limitations. Our ongoing research is still at the initial stage; thus, only preliminary findings can be discussed in this short paper. This paper considers an area where a transnational structure is already present, even though collaboration among different regions pertaining to two different countries is still limited. Future research should focus on areas where such a structure is not present. In this case, the focus of the research could be to study how a transnational structure can be created and implemented. Moreover, future studies should be specifically focused on the identifications of the obstacles that prevent the Euregio transnational structure from facilitating more systematic collaborations among the three regions.

Managerial implications. First, this study will provide relevant practical information for the Trentino - South Tyrol - Tyrol Euregio region, by showing that the Euregio transnational structure is still under-exploited in this sense. By uncovering this untapped potential, our research underscores the imperative for the Euregio transnational structure to enhance interrelations and communication channels among various local stakeholders, fostering a robust collaborative network. Following this coopetition paradigm, also the three DMOs must recognize the latent opportunities within the Euregio transnational framework. This is also valid for other supraregional and transnational structures with similar dynamics.

Originality of the paper. Even though preliminary, findings confirm previous studies on digital transformation as an enabling factor for more sustainable tourism through tools that improve data collection and processing of touristic flows (Schönherr et al., 2023). Moreover, digital transformation allows the destinations to better face challenges related to sustainability issues, through the opportunity to disseminate findings and involve local residents in the decision making (Dickinson et al., 2017). However, it also shows a lack of collaboration and sharing of data among the three destinations considered (Schönherr et al., 2023), except for very few exceptions, related to single, successful events. This research will contribute to previous literature on collaboration in digital transition for sustainable tourism (Schönherr et al., 2023). Moreover, this research is also interesting for collaboration literature in tourism. Finally, to the best of the authors' knowledge, this study is the first considering a supraregional structure to study collaborative and coopetition dynamics among tourism destinations.

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Measuring Destination Carrying Capacity from Residents' Perspectives: A Pilot Study in Garda Trentino

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Abstract

Destination carrying capacity is fundamental in managing sustainability and well-being within tourism, focusing on residents' perceptions and quality of life. This study aims to develop a methodology for estimating destination carrying capacity from the residents' perspective, specifically focusing on residents' satisfaction with life as an indicator. Building on previous research, which primarily focuses on objective measures of tourism impact, this study emphasizes the importance of subjective well-being measures in capturing the overall welfare of residents. The empirical method proposed by Tokarchuk et al. (2021) serves as the foundation for this study, with a key distinction being the collection of primary data on residents' satisfaction with life through ad hoc surveys.

To test the proposed methodology, the study conducts a pilot investigation in Garda Trentino, a high-visitor destination in the Trentino-Alto Adige region. A sample of 121 residents from municipalities including Riva del Garda, Arco, and Nago-Torbole is surveyed over eight weeks during the summer of 2023 to assess how their satisfaction with life varies with tourism intensity.

Findings suggest a nonlinear relationship between tourism intensity and residents' satisfaction with life, echoing previous research. The study reveals the presence of distinct resident groups based on their acceptance of tourism, with an optimal level of tourist intensity identified for residents more receptive to tourism. Moreover, the study underscores the subjective nature of defining an "acceptable" level of tourism and highlights the importance of considering resident perspectives in destination management decisions.

The study develops an innovative and relatively low-complexity methodology for estimating destination carrying capacity from the residents' perspective. By focusing on residents' subjective well-being, the study provides valuable insights for destination management and tourism academic research.

Key words: carrying capacity; residents' wellbeing; sustainability; panel data; fifth; sixth

Framing of the research. The concept of destination carrying capacity is central to addressing the critical concern of managing sustainability and well-being for individuals and society within tourism. In recent decades, extensive research has delved into this realm, specifically examining the impact of tourism on residents' lives within destination areas, focusing on their perceptions of tourism development and its repercussions. The World Tourism Organization defines tourism carrying capacity as "the maximum level of visitor use and related infrastructure that an area can absorb before place values are reduced to an unacceptable level" (World Tourism Organization, 2014, page 20).

Academic research in the field focused on the measurement of social carrying capacity. The leading approach is to estimate residents' attitudes toward tourism (e.g., Saveriades, 2000; Jurado et al., 2012). If it is observed that residents positively perceive tourist presence in the area, the conclusion is reached that social carrying capacity is not surpassed. This approach does not allow for an exact definition of the limits on tourism intensity associated with overtourism.

The studies based on the perception of tourism impact typically investigate the effects of tourism on objective welfare measures like income increase, creation of new jobs, pollution, crime rates, etc. Objective measures, however, can capture only partially the aspects of life that contribute to welfare (Kahneman and Sugden, 2005). Following a general tendency in economics that shifts attention to the adoption of subjective well-being measures that capture the overall welfare of individuals, the study of the impact of tourism on subjective measures of the quality of life of residents became a major focus of recent tourism studies (Uysal et al., 2016). These studies find a significant relationship between tourism development and subjective measures of residents' quality of life.

As demonstrated by previous studies, research on tourism's impact on residents' lives often yields contradictory findings regarding both the overall effect of tourism and the factors that moderate this relationship (Harril, 2004;

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Sharpley, 2014; Uysal et al., 2016). This inconsistency may stem from the fact that many studies are conducted as case studies focusing on specific tourism destinations, each characterized by its unique stage of development, historical context, tourist profile, and seasonality, among other factors. While some research may include multiple destinations within a single country (Kim et al., 2013) or compare destinations across different countries (Tosun, 2002), such studies often lack a unified and comparable base between the analyzed destinations, limiting the generalizability of their results to other settings. This fragmented approach to studying tourism impacts underscores the need for a more comprehensive and standardized methodology that can provide actionable insights applicable across diverse destination contexts.

Another approach undertaken by studies commissioned by industry and policymakers consists of collecting information on a set of tourism development indicators for an arbitrarily defined group of destinations. A comparative analysis of these indicators results in a conclusion as to whether some destinations are at risk of overtourism. This analysis requires the ad-hoc definition of threshold values to judge associated risk. This type of examination allows destinations to define their relative standing relative to other destinations. Still, it raises questions on determining the threshold, which destinations to include in the analysis, and at what level of spatial and temporal detail the study should be conducted.

Tokarchuk et al. (2021) proposed a methodology that allows measuring a destination's carrying capacity based on residents' satisfaction with life. The study develops a methodological framework to assess the maximum number of tourists visiting an urban destination without excessively influencing residents' perceived quality of life. It demonstrated a non-linear inverted-U-shaped relationship between tourism intensity and residents' satisfaction with life. The vertex of this relationship corresponds to the optimum level of tourism intensity that residents can accommodate.

The method is based on a socio-economic panel (SOEP) run by DIW nationwide in Germany since 1984 and analyzed for Berlin. However, few destinations can rely on the existing panel data regarding residents' satisfaction with life. Thus, although Tokarchuk et al. (2021) indicated the way to address the problem of point estimation of the destination's carrying capacity on the residents' side, it left open the question of how the destination can address the measurement of carrying capacity if it cannot count on existing data on residents' well-being.

Purpose of the paper. The present study aims to develop a methodology to estimate the carrying capacity of a destination on the side of residents. It answers the question of how many tourist residents are willing to welcome in the area of their residence and when the tourists' presence becomes too much. The present study follows the empirical method proposed by Tokarchuk et al. (2021) for measuring tourism carrying capacity for residents, which utilizes existing secondary data on residents' wellbeing. However, unlike the study conducted by Tokarchuk et al. (2021), the present research takes a different approach by conducting ad hoc surveys to collect primary data on residents' satisfaction with life. This methodology allows for a more tailored assessment of how tourism intensity, measured as weekly tourist nights per resident, impacts residents' wellbeing throughout the tourism season. By directly engaging with residents through surveys, the present study aims to provide a nuanced understanding of how their satisfaction with life evolves in response to varying levels of tourism activity.

Methodology.

Conceptual model

Tourism has numerous positive and negative impacts on residents' quality of life. On the positive side, tourism fosters economic growth, cultural exchange, and community development. One significant benefit is the creation of employment opportunities, as tourism generates jobs across various sectors, such as hospitality, transportation, and retail. Additionally, tourism encourages preserving and celebrating cultural heritage as communities showcase their traditions, arts, and cuisine to visitors, instilling a sense of pride and identity among residents. Furthermore, tourism often stimulates infrastructure development, improving access to essential services and amenities for locals while promoting environmental conservation through sustainable practices. Ultimately, by diversifying the local economy, fostering cross-cultural understanding, and enhancing community pride, tourism can contribute to residents' overall wellbeing and prosperity in destination areas.

Tourism can also impose negative impacts on residents' lives in destination communities. One significant challenge is the strain on local infrastructure and resources, as the influx of tourists often exceeds the capacity of existing facilities, leading to overcrowding, traffic congestion, and increased demand for utilities such as water and electricity. Additionally, commodifying culture and heritage to cater to tourist preferences may result in the loss of authenticity and identity for residents as traditional practices are modified or commercialized for mass consumption. Moreover, tourism can exacerbate social inequalities, with residents facing rising living costs, housing shortages, and displacement due to gentrification driven by tourism development. Furthermore, the environmental degradation associated with tourism, including pollution, habitat destruction, and depletion of natural resources, poses significant threats to residents' health and wellbeing, as well as the sustainability of their communities in the long term.

At lower levels of tourism development, the positive outcomes of tourism often outweigh the negative impacts, leading to overall improvements in residents' lives. Initially, as tourism begins to develop in a destination, residents may experience economic benefits such as job creation, income generation, and business opportunities. Cultural exchange and appreciation also thrive, as residents engage with tourists, sharing their traditions and heritage, fostering a sense of community pride and identity. Additionally, infrastructure development spurred by tourism investment enhances residents' access to essential services and amenities, contributing to their overall quality of life.

However, as tourism intensity increases beyond a certain threshold, negative impacts intensify while positive outcomes plateau. Issues such as overcrowding, environmental degradation, and cultural commodification become more pronounced, straining local resources and disrupting residents' daily lives. Social inequalities may emerge, with residents facing challenges such as rising living costs, housing shortages, and displacement. Furthermore, environmental concerns such as pollution and habitat destruction threaten residents' health and wellbeing.

Due to the joint effect of positive and negative impacts, the overall effect of tourism on residents' lives follows an inverted U-shaped curve. At low levels of visitation, the positive benefits of tourism dominate, leading to a net positive impact on residents' lives. However, as tourism intensity increases, reaching a maximum point, negative outcomes begin to outweigh the positives, resulting in a decline in residents' overall wellbeing due to overvisitation and unsustainable tourism practices.

In the present study, we consider the joint effect of tourism on residents' lives represented by residents' subjective quality of life. According to a recent review of the vast literature on subjective wellbeing reported by Diener et al. (2018), citizens value their quality of life more than other measures of society development, like income or employment. These indicators are more comprehensive and include much more than traditional economic measures of prosperity. For instance, it is demonstrated that environmental costs of economic growth, a frequent concern of residents about tourism, are accounted for in the reported values of subjective wellbeing. Moreover, these indexes are related to other highly attractive policy outcomes like better health or work productivity. Not surprisingly, many governments worldwide established monitoring of the wellbeing of their citizens, creating large longitudinal datasets of representative data that can also be used for tourism evaluation.

The relationship between tourism and subjective wellbeing of host communities is well documented in tourism research (Uysal et al, 2016). This makes subjective indicators of individual wellbeing, like Satisfaction with life, Happiness, and Quality of life, important variables for studying tourism's impact on residents' lives.

The present study follows the empirical method that Tokarchuk et al. (2021) proposed for measuring tourism carrying capacity for residents. The objective variable in the present study is residents' satisfaction with life. Unlike the study by Tokarchuk et al. (2021), the present study develops a methodology for measuring carrying capacity in the case in which data is collected on residents' wellbeing as primary data.

Empirical strategy

To test this methodology, a pilot study was conducted on the case of Garda Trentino, situated in the Trentino-Alto Adige region. This destination includes the municipalities of Arco, Riva del Garda, and Nago-Torbole. Lake Garda ranks second, immediately after the Romagna Riviera, in terms of arrivals nationwide, while it ranks third in terms of overnight stays (XXV Rapporto sul turismo, 2022). Municipality Riva del Garda is ranked first regarding arrivals in Trentino province. With 17190 residents, it will welcome more than 1 million arrivals in 2023.

Situated along the shores of Lake Garda and surrounded by towering mountains, the municipalities of Riva del Garda, Arco, and Nago-Torbole are squeezed into a narrow strip of land. This geographical constraint means that residents and tourists are concentrated within a limited area, leading to various difficulties in daily life.

The limited space in the area becomes an issue, particularly during peak tourist seasons. The influx of visitors exacerbates congestion on roads and sidewalks, making it difficult for residents to navigate the town. Furthermore, the competition for limited housing and resources drives up living costs, making it challenging for residents to afford suitable accommodation and maintain a high quality of life.

Unsurprisingly, the intensity of tourism, particularly during peak seasons, exacerbates existing issues and creates additional hardships for the local population. This underlines the importance of understanding the acceptable level of tourism presence in the area.

A sample of residents in three municipalities, Riva del Garda, Arco, and Nago-Torbole, was selected to estimate residents' carrying capacity in the Garda Trentino. The sample was composed of 121 individuals selected by convenience sampling. Respondents in the sample were interviewed during different stages of the summer of 2023 to observe how their satisfaction with life varied with the proceeding of the season.

After the initial interview in April 2023 at the beginning of the season that aimed to collect information on characteristics of the sample and their attitude towards tourism, respondents were approached eight times during the season and asked to evaluate their satisfaction with residents' lives given the tourism intensity they felt in the previous week. Overall, 968 individual observations were collected over eight weeks of the summer season from April to October 2023.

Econometric strategy

The variable of interest, resident life satisfaction during the past week, was measured as the degree of satisfaction expressed on a Likert scale from 1 to 10. The responses represent observations where the categories have an inherent order or hierarchy, but the distance between categories is not specified or uniform. In other words, the categories have an order, but it cannot be assumed that the difference between each pair of categories is constant or well-defined. The categories "very dissatisfied," "dissatisfied," "neutral," "satisfied," and "very satisfied" have an order. Still, the distance between "very dissatisfied" and "dissatisfied" is not necessarily the same as the distance between "dissatisfied" and "neutral".

The ordered probit model is the econometric approach suitable for handling this data type. In the case of this study, the ordered probit model must be estimated using the panel data model. This model in our research takes the following form:

$$P(Y_{it} \leq j | X_{it}, \alpha_i) = \Phi(\gamma_j - \beta_1 X_{it}^2 - \beta_2 X_{it} - \beta_3 Z_i - \alpha_i) - \Phi(\gamma_{j-1} - \beta_1 X_{it}^2 - \beta_2 X_{it} - \beta_3 Z_i - \alpha_i) \quad [1]$$

Where

Y_{it} represents tourist i 's satisfaction with situation t , an ordinal observation;

X_{it} is the degree of crowding in situation t

In this formulation, the term $\beta_1 X_{it}^2$ captures the effect of the quadratic relationship between the degree of crowding and tourist satisfaction. The inverted U-shaped relationship is confirmed if the coefficient β_1 , which corresponds to the quadratic term, has a negative sign and coefficient β_2 has a positive sign. The sign of the β_1 coefficient is the key element for the inverted U appearance since the quadratic term gives a concave shape to the curve.

However, the coefficients of the ordinal Probit model indicate the probability of moving from one ordinal category to another concerning the independent variables. Consequently, this model does not allow us to build the relationship between the degree of crowding and tourist satisfaction, which is needed to identify the carrying capacity.

To address this difficulty, in the present study, we chose to estimate the ordinal Probit panel model with fixed effects to check that the relationship between the degree of crowding and tourist satisfaction exists and has the correct sign. Furthermore, a linear panel model with fixed effects was estimated to allow the estimation of carrying capacity. This model takes the following shape

$$Y_{it} = \beta_0 + \beta_1 X_{it}^2 + \beta_2 X_{it} + \beta_3 Z_{it} + \alpha_i + u_{it} \quad [2]$$

As with equation [2], the term $\beta_1 X_{it}^2$ captures the effect of the quadratic relationship between the degree of crowding and tourist satisfaction. The inverted U-shaped relationship is confirmed if the coefficient β_1 , which corresponds to the quadratic term, has a negative sign and coefficient β_2 has a positive sign.

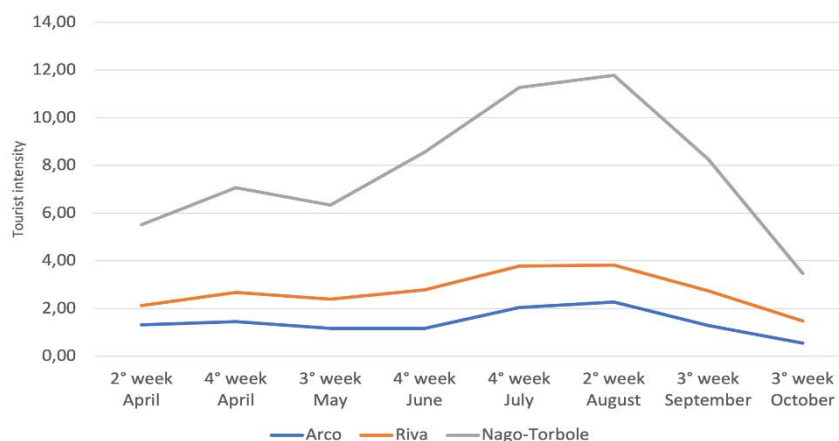
To establish the carrying capacity it is necessary to calculate the vertex of the parabola obtained. The degree of crowding corresponding to the vertex of the parabola represents the optimal degree of crowding to maximize residents' satisfaction with life. The vertex of the parabola is calculated as follows:

$$h = -\frac{\beta_2}{2\beta_1} \quad [3]$$

Results. According to the most recent Istat source, the inhabitants of the Arco, Riva del Garda, and Nago-Torbole are made up of 17,750, 17,787, and 2,788, respectively. Our sample comprises 60% of residents in Arco, 34% in Riva del Garda, and the remaining 6% in Nago-Torbole. It is formed by 60% of females with an average age of 38. 72% of panel members were born in the area and 7.4% work exclusively with tourists.

The data on tourism intensity during the weeks under study were obtained from ISPAT. Figure 1 presents tourism intensity measured as overnight stays per resident in the municipalities Riva del Garda, Arco and Nago-Torbole during the weeks under study. Tourism intensity presents seasonal pattern, with peak season corresponding to August. The highest intensity of tourism is observed in Nago-Torbole, where tourists are almost twice the local population during the peak period in August. In Riva del Garda every third person on the territory is a tourist during the peak season in August.

Figure 1. Tourism intensity, weekly tourist nights per resident, in municipalities Riva del Garda, Arco, Nago-Torbole in the weeks under study



Equations [1] and [2] were estimated on the whole sample. The estimation produced statistically nonsignificant coefficients related to quadratic and linear terms. Table 1 reports the estimation results when the quadratic term was dropped, and only a linear relationship was estimated. The Oprobit and fixed effects panel models present negative and statistically significant coefficients corresponding to tourism intensity. The data indicates a negative linear relationship between satisfaction with residents' lives and tourism intensity. This result is robust concerning model specification. It suggests that the tourism intensity observed in the study is too high, and only the downward slope of the relationship is observed.

Table 1. Regression results of the Oprobit and fixed effect model. Dependent variable: Residents' satisfaction with life given the level of tourism intensity during the week.

Variables	Oprobit model	Fixed effects panel model
Tourist intensity (linear)	-0.286***	-0.388***
Dummy_Riva	0.384*	0.503*
Dummy_Nago	1.942***	2.766***
Number of observations	968	968

*** $p < 0.01$, ** $p < 0.05$, * $p > 0.1$

The whole sample has been divided into two subsamples based on the evaluations that respondents gave in the initial survey concerning tourism's impact on their quality of life. Interviewees composing the first subsample reported a higher quality of life due to tourism in the area; they reported a positive impact of tourism on their quality of life of an average of 8.76 on a Likert scale of 1 to 10. This group is composed of 71 individuals and corresponds to 568 observations. We refer to this group as the "Tourism-Favorable" group. This group consists of Riva del Garda and Arco residents, but no one residing in Nago-Torbole has joined this group.

A second group includes individuals who are less tolerant of tourism and reported an average contribution of tourism to their quality of life of 7.6 on a Likert scale of 1 to 10. We refer to this group as the "Tourism-Averse" group. It consists of 50 individuals and corresponds to 400 observations.

Table 2 reports the results of models [1] and [2] on a subsample of "Tourism-Favorable" group. The coefficient corresponding to the quadratic value of tourism intensity is statistically significant and is negative, while the coefficient corresponding to its linear term is statistically significant and positive. The coefficients are robust regarding the estimation method. They present the signs compatible with an inverted U-shaped curve. It suggests that there is an optimum value of tourism intensity that maximizes residents' satisfaction with life.

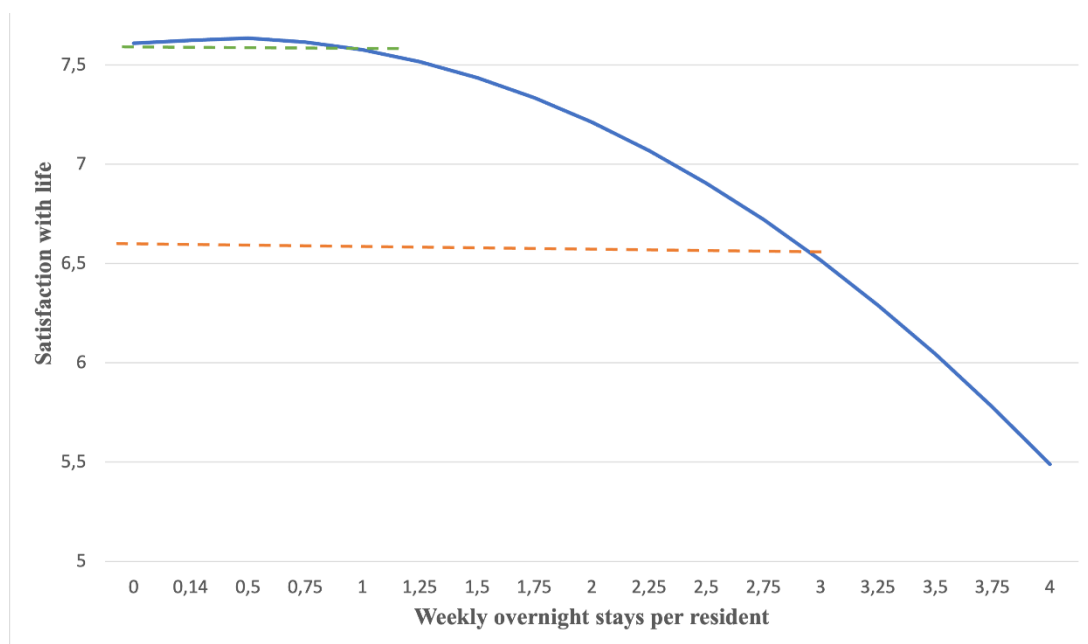
Table 2. Regression results of the Oprobit and fixed effect model on a subsample of "Tourism-Favorable". Dependent variable: Residents' satisfaction with life given the level of tourism intensity during the week

Variables	Oprobit model	Fixed effects panel model
Tourist intensity (quadratic)	-0.096**	-0.147**
Tourist intensity (linear)	0.01*	0.05*
Dummy_Riva	0.461*	0.637**
Observations	568	568

*** $p < 0.01$, ** $p < 0.05$, * $p > 0.1$

We apply equation [3] to calculate tourism intensity that maximizes residents' satisfaction with life. This value corresponds to 0,40 overnight stays per resident in the municipality. Only Arco registered a tourism intensity value similar to this in October, with 0,54 weekly overnight stays per resident. Figure 2 represents graphically the relationship between residents' satisfaction with life and tourism intensity. Given that only Arco and Riva del Garda inhabitants are included in the group "Tourism-Favorable", the range of tourism intensity corresponds to the values observed in these areas.

Figure 2. Graphical representation of the relationship between residents' satisfaction with life and tourism intensity for "Tourism-Favorable" group.



The definition of carrying capacity as “the maximum level of visitor use and related infrastructure that an area can absorb before place values are reduced to an unacceptable level” (World Tourism Organization, 2014, page 20) leaves space for the arbitrary definition of what is “unacceptable.” Analysis of Figure 2 demonstrates that life satisfaction values around the optimum are similar. One can define the optimum carrying capacity corresponding to the value of tourism intensity for which residents' satisfaction with life is not lower than a total absence of tourism. This situation is represented in Figure 2 with a green dotted line. In this case, the weekly tourism capacity that residents can accommodate equals 0,75 weekly overnight stays per resident. This value includes tourism intensity registered in Arco in October.

An alternative definition of “acceptable” can be the level of tourism intensity that reduces satisfaction with residents' life no more than one point. This case is represented in Figure 2 by the orange dotted line. In this case, a maximum level of weekly overnight stays per resident equals 3. This definition of carrying capacity includes all the analyzed periods in Arco and most period in Riva del Garda except for the peak season starting at the end of July and August.

Table 3. Regression results of the Oprobit and fixed effect model on a subsample of “Tourism-Averse”. Dependent variable: Residents' satisfaction with life given the level of tourism intensity during the week

Variables	Oprobit model	Fixed effects panel model
Tourist intensity (linear)	-0.211***	-0.291***
Dummy_Riva	0.352	0.523
Dummy_Nago	1.476 ***	2.169***
Observations	400	400

*** $p < 0.01$, ** $p < 0.05$, * $p > 0.1$

Finally, the estimation of models [1] and [2] for “Tourism-Averse” group was performed. As for the whole sample, this estimation leads to the nonsignificant coefficients related to quadratic terms of tourism intensity. Thus, Table 3 reports the estimation results of a linear relationship. The coefficient corresponding to tourism intensity is statistically significant and negative. This indicates that any increase in the visitation level within the range observed in the present study negatively influences satisfaction with residents' life of this group. This result suggests that for this group the unacceptable level of tourism intensity has been surpassed.

Research limitations. While the present study offers valuable insights into measuring tourism carrying capacity from the residents' perspective, it is essential to acknowledge its limitations, particularly as a pilot study. Firstly, the sample size needs to be increased, which may impact the generalizability of the findings. Despite efforts to ensure representativeness, the sample may only partially capture the diversity of resident perspectives within the destination. Additionally, the study focuses solely on one destination, limiting the scope of the analysis and potentially overlooking variations in tourism impacts across different destinations. As such, the findings may not apply to other destinations with distinct characteristics or tourism dynamics. Furthermore, as a pilot study, there may be methodological challenges or uncertainties that could affect the accuracy or reliability of the results. Future research should address these limitations

by expanding the sample size, considering multiple destinations, and refining the methodology to enhance the robustness of the findings.

Managerial implications. The present study develops a methodology that can be implemented by smaller-scale destinations needing more comprehensive data, whereas past measurements of carrying capacity were challenging due to data limitations. By constructing a representative panel of residents and utilizing straightforward questions, destination managers can obtain clear and actionable insights into residents' perceptions of tourism without extensive data collection or benchmarking methodologies. By revealing distinct resident groups and identifying optimal levels of tourist intensity for those more receptive to tourism, destination managers can tailor their strategies to specific resident preferences, thereby enhancing overall destination management effectiveness.

Moreover, the study emphasizes the subjective nature of defining an "acceptable" level of tourism, highlighting the importance of considering resident perspectives in destination management decisions. By enabling destinations to identify optimal thresholds and conduct cost-benefit analyses based on resident satisfaction and tourist intensity, the methodology provides valuable insights for decision-makers seeking to balance tourism development and resident well-being.

Originality of the paper. The study's originality lies in developing and applying an innovative method for measuring tourism carrying capacity from the residents' perspective. This method offers a novel approach that is relatively low in complexity and resource requirements. One key aspect of this method is its reliance on constructing a representative panel of residents, either over the year or based on seasonal variations in destination activity. The questions posed to residents are straightforward and designed to elicit clear and actionable responses. This approach contrasts with traditional methods that may require extensive data collection and benchmarking methodologies, which can be resource-intensive and impractical for smaller-scale destinations lacking comprehensive data.

The application of this methodology to a high-visitation destination where past measurements of carrying capacity were not feasible due to data limitations demonstrates its adaptability and relevance in real-world settings. Through analysis, the study reveals the presence of distinct groups within the resident population concerning their acceptance of tourism. For the group more receptive to tourism, the study identifies an optimal level of tourist intensity.

Furthermore, the study highlights the subjective nature of defining an "acceptable" level of tourism, underscoring the importance of considering resident perspectives in destination management. By enabling destinations to identify optimal thresholds and conduct cost-benefit analyses in terms of resident satisfaction and tourist intensity, this methodology provides valuable insights for decision-makers.

In addition to its practical applications for destination management, this method also contributes significantly to academic research in tourism. Providing a standardized approach to evaluating carrying capacity offers researchers a valuable tool for comparing and analyzing destinations of varying characteristics and levels of development.

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A sensitizing literature review for future research about overtourism in Milan

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Abstract

One kind of tourism that has grown faster than other forms, sometimes regardless of being governed and planned, is urban tourism, often causing problems related to the so-called overtourism. We can quote the case of Milan, the second largest city in Italy after the capital, Rome, with a typical industrial vocation, 1.4 million residents, and a constantly growing economy in all sectors. The latest figures show a real boom in tourists, with 900,000 tourists only in July 2023. The Milan case study could advance the theory dedicated to urban tourism, offering a new and replicable model for other cities. The role of local government in tourism development is well-known and studied by several authors. Booming tourism is often connected with appropriate mechanisms and processes put in place; these mechanisms should ensure development management, promotion, and monitoring and simultaneously avoid issues such as overtourism, infrastructure, accommodation, security, and gentrification. In this light, governance is vital to tourism development, as several factors should be managed and integrated. Local government also orchestrates a network of stakeholders, including residents, local communities, businesses, the tourism industry, and central government, to mention a number. Our research is divided into two parts. This first part is dedicated to developing a semi-structured questionnaire to collect data and information on how the local government of Milan is managing the constant growth in the number of tourists and its issues.

Key words: overtourism; local government; Milan; semi-structured interview; inductive research

Framing of the research. *We reviewed the most relevant papers dedicated to urban tourism, trying to make emerge these concepts.*

Tourism is a powerful economic driving force for urban contexts and regions as well (Garcia 2010; Calero and Turner, 2020). However, some recent factors linked especially to the so-called sharing economy have brought to light also some dark sides of urban tourism. A new era based on digital platforms has augmented potentialities for tourists, the tourism industry, and city councils; some stakeholders have maximized their value but with the sacrifice of others (Buhalis et al, 2020). Effective policies for tourism growth require an integrated and multi-faced approach to tourism policy development (Haxton, 2015, p. 3). The Organization for Economic Co-operation and Development (OECD) committee dedicated to tourism, through its reports, claimed that tourism policies should be long-term based, and so far, governments have put insufficient attention on policy inter-linkages with related policy areas. In the same tone, the United Nations World Tourism Organization (UNWTO, 2018) recommended a series of long-term strategies and policies to overcome most of the urban tourism growth problems along with measures to be implemented and monitored. OECD Tourism Committee identified seven key issues for sustainable growth in the long-term (Haxton, 2015); tourism and land use planning, competing demands for scarce resources, tourism and transport, tourism and emergency management, high value-added growth and tourism, SMEs and global value chains, and supporting effective policies for tourism growth. According to the OECD, these key issues can also challenge urban tourism.

Tourism and land use planning, combined with the competing demand for scarce resources, is probably one of the most studied issues for urban tourism, often ascribable to the overtourism phenomenon (Peeters et al., 2021). Dansero et al. (2016) analyzed the Italian city of Turin and the social phenomenon of urban land use connected with the integration between urbanism and tourism. The authors highlighted the difficulties for policymakers in integrating context territory, typical of existing activities, and project territory, a new territory allocated for events or leisure activities, sometimes temporary. Richards (2017) demonstrated how urban zoning schemes are outdated and unsuitable for new situations where dynamism is the key. A typical mistake in local government planning and development is the creation of delimited event zoning. This stems from traditional urban zoning policy, where specific parameters and demarcations for each zone are established (Page and Duignan, 2023). However, Page and Duignan (2023, p. 6) debated how blending tourism and event enterprise could be integrated into the city without creating delimited zones and modifying the traditional internal

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geography of postmodern cities. According to the authors, the simple research question for this debate is: who belongs and who owns the keys of the city? The answer is not that simple, and from the literature, it seems there are different emerging approaches. Concurrent and local factors such as land ownership, political choices, social classes, and others can differently shape the space of the city and urban tourism. For instance, Ong and Smith (2021), analyzing the development of Bangkok and Jakarta, proposed a model where tourism is an early feature for the expansion of the cities and overtourism is not a big issue like in other cities. Apparently, these big cities have created separate and sometimes overlapping areas for tourism. However, the authors concluded that this model could not be generalized to smaller cities, and factors such as Airbnb could also change in the future the geography of the two mega-cities; as we later discuss, this has happened in several other cities. Bouchon and Rauscher (2019) corroborated different results for smaller cities by studying typical European ones of different sizes, but certainly not classifiable as mega cities. The authors showed how Paris, Barcelona, Berlin, Munich, Paris, Regensburg, and Venice have been troubled by overtourism problems, even if they have tried to improve the issue in different ways. Bouchon and Rauscher (2019) analyzed these cities through the lens of the UNWTO study (2018). The latter, indeed, proposed one of the most deepened studies related to sustainable tourism growth in cities and overtourism. The study was carried out in eight European cities: Amsterdam, Barcelona, Berlin, Copenhagen, Lisbon, Munich, Salzburg and Tallinn. In this document, eleven strategies and sixty-eight measures are considered. In summary, the strategies deal with the dispersal of tourists within the city, time-based dispersal, stimulating new itineraries in the city, reviewing regulations, enhancing visiting segmentation, ensuring benefits for residents, tourists, and communities, improving infrastructure and facilities, communicating with and engaging local stakeholders and tourists, and set monitoring and response measures. The most negative impacts of overtourism perceived by residents are an increase in house prices, an increase in private and public transport prices, and a general increase in shopping and food prices. By contrast, the UNWTO research also highlighted that residents perceived positive impacts from tourism, such as an international atmosphere, more events, and protection and restoration of traditional architecture. The UNWTO study stressed the concepts of adopting long-term policies and key policy measures as well. Confirmation of overtourism issues in European cities came directly from the European Parliament (Peeters et al., 2018) which defined a set of indicators to measure and control overtourism: tourism density and intensity, the share of Airbnb and Booking.com bed capacity, the share of tourism in local GDP, air travel intensity, closeness to airport and cruise port and UNESCO World Heritage Sites. Bouchon and Rauscher's paper (2019) discussed, for instance, how Barcelona established the Barcelona Tourism Board, which is dedicated to communicating the city as a quality cultural and creative destination enhancing high-value tourism segmentation and shifting from a cheap image perception. Barcelona and Berlin are struggling to integrate the needs and expectations of tourists and residents towards "quality before growth" (Bouchon and Rauscher, 2019, p. 612). A different scenario can be described for Munich; here, over-tourism has produced limited discontentment (Buchwald, 2019), as the local government has leveraged a dispersal of tourists within the city and enforced laws against the abuse of residential houses used for short rental through digital platforms. Munich also represents an interesting case study where, due to the high cost of living, there is a scarce gap between residents' and tourists' lifestyles. Specifically, UNWTO (2018) suggested that tourism strategies and policies should take the tourists into consideration among the stakeholders. The tourist becomes a temporary resident and is not seen as a complete stranger who steals spaces but rather an integrated invitee (Bouchon and Rauscher, 2019). Kagermeler and Erdmenger (2019) affirmed that integration problems arise when there is a large gap between the lifestyles of locals and tourists. The gap in lifestyle has been more felt in cities like Berlin and Venice; in the latter case, the phenomenon has been so exacerbated that the city center has been gradually left by residents who now live outside and often rent their houses, profiting from it and, to some degree, living with it (Oriani, 2022). Finally, Bouchon and Rauscher (2019) presented the Paris case study, where, without any planned strategy, a more time-based dispersal of tourists is occurring since many residents leave the city during summer.

Other authors, instead, analyzed different contexts where spaces for tourism are more blended with city spaces, sometimes creating contrasts and social conflicts. For instance, del Romeo Renau (2018) proposed the case study of Valencia. The authors claimed that digital platforms and the sharing economy have changed urban planning, bringing urban conflicts due to the "touristification" of urban areas.

Gutiérrez et al. (2017) studied how Airbnb is increasing tourism pressure in the city center of Barcelona, asserting that the phenomenon can be generalized to many other European cities. The rise of Airbnb and its impacts are so debated in the literature that Page and Duignan (2023) claimed that an astonishing 1100 papers have focused on it since 2011. For instance, Horn and Merante (2017) studied the short-term effects of Airbnb on the housing market in the city of Boston, arguing that policymakers were not able to make weighted decisions. Chang (2020) demonstrated how the room-sharing model of Airbnb in Taiwan has a positive effect on house rental and sales prices, while tax policies can reduce the number of Airbnb offers. Calzada (2020) shifted focus to data and algorithms owned by digital platforms like Airbnb and Booking.com, highlighting the need for different strategies for transforming the tourism model in Europe and reassessing tourism policy and planning, especially for cities. According to the author, new social models like cooperative platforms should be implemented for a more sustainable and democratic tourism model. Tourism "extractivist" platforms should not just be owned and managed by big digital corporations but rather by a European city-regional networked federation; this represents a multi-stakeholders framework made up of local and regional authorities, the private sector, including SMEs, and most importantly, citizens. This should improve the interactions between visitors and residents, where ultimately citizens decide their own future without external disruptive influences (Calzada, 2020, p. 83).

The OECD Tourism Committee, as well as the UNWTO, identified transport and mobility as another relevant issue for urban tourism. Tourism intensity is a demand-enhancing factor in urban public transport (Albalade and Bel, 2010),

and if mobility is hampered by an inefficient transport system, this could result in issues for tourists and residents. Nevertheless, the authors concluded that in 2010, the growth in tourism numbers seemed not to be addressed in several European cities by a sufficient extension of transport service supply. Domènech et al. (2023), investigated tourists' transport in Barcelona, a city that has had problems in terms of mobility for decades (Nieuwenhuijsen, 2020). Domènech et al. (2023) claimed how mobility and transport are embroiled directly or indirectly with overcrowding of public spaces, unruly behavior of visitors, impacts on urban spaces, and environmental issues. They concluded that tourist cities should adopt strategies for the use of different modes of transport in relation to the different profiles of tourists. Anton Clavé (2019) confirmed how tourists' mobility affects the planning and management of urban spaces, tourism activities as well as the quality of life of the different stakeholders involved, including residents. Several authors studied the negative effects of transport and mobility in terms of visitors' experience (Becken et al., 2017), city reputation, and rejection of tourism activities by local communities (Martín Martín et al., 2018).

On the subject of Milan and its local governance, some authors started analyzing how the city is trying to deal with the growth of tourists and visitors, in general, sharing its spaces and services. Rabbiosi (2016) was one of the first scholars who explored the initiatives of Milan as opportunities to meet and hybridize residents and tourists. Two specific initiatives have been managed since 2011 to change the relationships between these two stakeholders, legitimizing new urban geographies. The first one consisted of Milan residents inviting tourists for dinner, while the second was the establishment of a MigranTour as part of a European network that supported intercultural tourist itinerary exchanges. The author concluded this was just the beginning of a more integrated process, calling for broader urban policies. Bernardi and Diamantini, (2018) studied the urban governance of a tentative "sharing city" in Milan, developing a three-dimensional model and comparing it with Seoul's. Both local governments in 2018 were trying to work along technological, economic, and human dimensions to develop a sharing city avoiding a purely neoliberal logic of profit or a technocratic orientation. Even if the authors stressed the concept of cooperation between urban governance and the involved stakeholders, such as residents, businesses, third sector, digital platforms, and research centers, they concluded that both municipalities lacked institutionalized mechanisms of collaboration (Bernardi and Diamantini, 2018, p. 30). Furthermore, while the models pinpointed the involvement of local authorities and residents, there is neither a trace of tourists and their representatives among the stakeholders nor a discussion of the sharing city and its effect on tourism issues. Only some mentions of the well-known potential issues of gentrification connected with Airbnb rentals are alluded to. Investigating the impacts of Airbnb in Milan, Amore et al. (2022) criticized the Milan trajectory where, starting from the previous decade, private and business stakeholders favored a *lasses-faire* on short-term rental local legislation, favoring Airbnb which boomed in 2015 during the Expo event. The city council and the region tried to adopt legislation to limit the phenomenon, but Airbnb and other platforms have been meanwhile legitimized and often appreciated by residents. Aguilera et al. (2019) compared the responses to local legislation policies in Milan, Paris and Barcelona arguing that is difficult to completely enforce legislation to mediate digital platform effects on short-term rentals. We can conclude our literature review by stating that Milan probably is still in a transition from more than two decades of a market and liberal oriented governance, towards a more social and shared model (Costa et al., 2016), and in this narrative it is not clear what the plans and processes put in place for tourism management are.

Purpose of the paper. Our research is divided into two parts. This first part is dedicated to developing a semi-structured questionnaire to collect data and information on how the local government of Milan is managing the constant growth in the number of tourists and its issues. In this light, our research is twofold. First, we inductively developed semi-structured questionnaire to collect data and information. Then we analyzed the collected data to construct a theoretical framework addressing questions connected with the assumptions for urban tourism growth.

Methodology. In order to develop the semi-structured questionnaire, we found some sensitizing concepts through the previous framework of literature review. Sensitizing concepts give the researcher an overall sense of direction and guidance in approaching inductive research, suggesting preparatory concepts to develop (Bowen, 2006). Sensitizing concepts are starting elements in data grouping, about which the researcher usually has no distinct idea. In this way, we reviewed the most relevant papers dedicated to urban tourism, trying to make these concepts emerge.

Results. We developed a first interview protocol, which is a semi-structured questionnaire, to collect data and information about the sensitizing concepts. Following the open questions forming the questionnaire to be administered to important policymakers of Milan.

- Is the growth in tourists connected to precise planning?
- Or is it more the result of different synergic actions not always connected with each other?
- Talking about overtourism, what are the most significant impacts (e.g., land competition, gentrification, prices on the rise, B&Bs and residents, traffic congestion, micro-criminality, public disturbance, etc.)?
- In what way are you dealing with such issues (in the short and long term)?
- Or are you tolerating these problems because you think they are intrinsically rooted in the growth?

Research limitations. This part of the research has limitations mainly linked to its aim of developing a semi-structured questionnaire and the possibility of not collecting relevant data for inductive theory construction.

Managerial implications. We discussed how Milan's local government intends to plan and manage the issues involved with the growth. In this way, we provide practitioners such as tourism planners, policymakers, and other managers within local governments with a framework that can be implemented and adapted in similar contexts. Milan is classified as a medium-large-sized European city like several others around Europe, and our results could be generalized

for a range of cities in a similar context. In the broad debate on urban tourism, this research also brings new theoretical elements to fill the gaps mentioned in the need for more structured approaches and future directions.

Originality of the paper. To the knowledge of the authors, this is the first attempt to develop a questionnaire for this aim.

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La formazione degli ecosistemi digitali tra strategie deliberate e processi spontanei

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Abstract

Questo studio affronta il tema della formazione degli ecosistemi digitali intorno ad una piattaforma digitale, che rappresenta il contesto in cui le interazioni tra i diversi attori avvengono. La fase di avvio di tali ecosistemi è particolarmente critica e necessita di una gestione attenta da parte degli orchestratori, dal momento che in questa fase occorre porre le basi per innescare efficaci effetti di rete che consentano la sopravvivenza e lo sviluppo successivo dell'ecosistema.

La ricerca, in particolare, prende in esame l'interazione tra le strategie deliberatamente messe in atto dall'impresa guida per gestire la creazione e l'espansione dell'ecosistema ed i meccanismi di sviluppo che emergono in modo spontaneo nell'ecosistema.

Il lavoro analizza il caso studio di izi.TRAVEL, una piattaforma digitale che mira a favorire la democratizzazione della cultura e che utilizza lo storytelling per la creazione dei contenuti culturali. Lo storytelling, attraverso un linguaggio semplice e di facile comprensione per tutti, consente infatti una più facile partecipazione sia a coloro i quali intendano creare e condividere contenuti culturali tramite la piattaforma digitale, sia ai fruitori degli stessi.

I risultati sottolineano il ruolo delle strategie attuate deliberatamente da izi.TRAVEL per espandere la popolazione dell'ecosistema in termini sia di numerosità che di varietà degli attori, al fine di creare valore e di favorire lo sviluppo dell'ecosistema. Il lavoro evidenzia altresì l'importanza di alcuni meccanismi di sviluppo che si realizzano in modo spontaneo e non controllato dall'impresa guida, contribuendo positivamente allo sviluppo dell'ecosistema anche attraverso l'attrazione di nuove tipologie di attori. L'analisi condotta evidenzia come tali meccanismi spontanei possano essere in qualche modo stimolati dalle strategie messe in atto dai gestori dell'ecosistema, consentendo così di riconoscere un'interazione positiva tra scelte deliberate e meccanismi emergenti nello sviluppo dell'ecosistema.

Il lavoro offre sia contributi teorici, che arricchiscono il dibattito sui processi di avvio degli ecosistemi digitali, sia implicazioni pratiche per i manager coinvolti nella loro gestione.

Parole chiave: *ecosistema digitale; creazione dell'ecosistema; strategia; storytelling; processi emergenti; meccanismi di cambiamento.*

Inquadramento della ricerca. *Gli ecosistemi digitali sono contesti virtuali in cui, attraverso piattaforme digitali, i diversi partecipanti possono scambiare informazioni, esperienze, servizi e contenuti, in modo tale da generare valore sfruttando le loro complementarità (Alaimo et al., 2020; Cennamo, 2021; Gawer, 2014; Jacobides et al., 2018; Tan et al., 2015).*

Tali ecosistemi sono stati analizzati dagli studiosi prendendo in prestito la metafora degli ecosistemi naturali, seppur con alcune differenze (Evans, 1956; Marton, 2022). Infatti, diversamente dagli ecosistemi naturali, un ecosistema digitale non si forma in modo del tutto spontaneo, avendo bisogno di una infrastruttura tecnologica, che rappresenta l'“habitat” in cui l'ecosistema ha origine ed in cui i suoi diversi attori interagiscono. Esso dunque si caratterizza per l'intenzionalità della sua creazione e della sua gestione (Cennamo, Santalò, 2019; De Reuver et al., 2018; Iansiti, Levien, 2004a; Jha et al., 2016; Kapoor, 2018; Moore, 1993). Per queste ragioni, alcuni studiosi contestano l'applicabilità della metafora ecologica agli ecosistemi digitali (Mars et al., 2012; Oh et al., 2016). Gli ecosistemi digitali sono più facilmente accostabili metaforicamente agli ecosistemi artificiali (come ad esempio un lago artificiale), che vengono creati e gestiti deliberatamente dall'uomo, ma nei quali è possibile che alcune dinamiche evolutive spontanee si realizzino portando, ad esempio, alla creazione di nuove specie (Clifford, Hefferman, 2018; Meyerhoff et al., 2019). Analogamente, anche negli ecosistemi digitali possono crearsi delle dinamiche di tipo spontaneo, che possono dare vita a processi generativi di cambiamento che contribuiscono all'evoluzione dell'ecosistema, seppur non precedentemente deliberati dall'impresa guida (Cennamo, Santalò, 2019). Tali processi emergenti, che si possono realizzare anche come conseguenza indiretta e

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non intenzionale di strategie implementate dai gestori dell'ecosistema, sono stati ad oggi poco osservati dagli studiosi, ma meritano una maggiore attenzione, dal momento che possono contribuire in modo positivo allo sviluppo dell'ecosistema.

Quanto premesso evidenzia l'importanza delle strategie adottate per l'avvio e lo sviluppo degli ecosistemi digitali, nella prospettiva della creazione del valore, nonché dell'osservazione delle dinamiche di sviluppo che da esse possono scaturire nell'ecosistema.

Gli studi condotti hanno preso in considerazione diverse tipologie di decisioni strategiche, che devono essere opportunamente coordinate tra loro per ottenere l'efficace funzionamento dell'ecosistema: da quelle relative alla progettazione dell'infrastruttura tecnologica, per consentire ai diversi attori di interagire efficacemente attraverso la piattaforma digitale (Hanseth, Lyyinen, 2010; Tilson et al., 2010; Tiwana et al., 2010) o a diverse piattaforme di interagire tra loro (Ondrus et al., 2015); a quelle di tipo organizzativo, relative alle modalità per disciplinare l'accesso all'ecosistema e per regolare, incentivare e controllare la partecipazione ed il comportamento degli attori, al fine di valorizzare le complementarità dei partecipanti (De Reuver et al., 2018; Feller et al., 2012; Gawer, Cusumano, 2014; Huber et al., 2017; Jacobides et al., 2018; Wareham et al., 2014); alle strategie messe in atto per lo sviluppo dell'ecosistema (Alaimo et al., 2020; Li, Agarwal, 2017; McIntyre, Srinivasan, 2017; Parker et al., 2017; Tan et al., 2015).

Obiettivo del paper. Questo lavoro esplora le prime fasi di vita degli ecosistemi digitali, attraverso l'analisi delle strategie implementate per la loro formazione e delle dinamiche di cambiamento che ne influenzano lo sviluppo (Adner, 2017; Jacobides et al., 2018; Dushnitsky et al., 2022).

Lo studio della formazione di un ecosistema digitale risulta particolarmente interessante e critico per l'elevata probabilità di fallimento proprio nelle fasi iniziali del suo ciclo di vita (Yoffie et al., 2019).

Il lavoro si concentra sugli ecosistemi governati da un'impresa leader, che generalmente è anche proprietaria della piattaforma digitale (Furr, Shiplov, 2018; Iansiti, Levien, 2004b; Williamson, De Meyer, 2012; Weill, Woerner, 2015).

Esso mira a comprendere le strategie deliberatamente messe in atto per popolare ed indirizzare lo sviluppo dell'ecosistema al fine di innescare i desiderati effetti di rete e creare valore. In particolare, vengono investigate le strategie dell'impresa guida orientate all'espansione della popolazione dell'ecosistema, in termini sia di numero che di varietà degli attori coinvolti (Adner, 2017).

Lo studio include altresì l'analisi delle implicazioni delle strategie implementate sul cambiamento nell'ecosistema, evidenziando in particolare come alcune dinamiche di sviluppo possano emergere in modo spontaneo, come conseguenze indirette, non previste né cercate, delle strategie attuate. Ciò che si intende evidenziare è, in particolare, come lo sviluppo dell'ecosistema nel tempo possa essere la conseguenza dell'interazione tra scelte deliberate e meccanismi spontanei di cambiamento.

Metodologia. Per indagare la formazione e lo sviluppo dell'ecosistema digitale, è stata condotta un'analisi in profondità del caso studio di izi.TRAVEL, una piattaforma digitale per la condivisione e fruizione di contenuti culturali, come audioguide e audiotour, lanciata nel 2013 e cresciuta velocemente negli anni seguenti in termini di numero e varietà degli attori coinvolti. Si ritiene che questo caso (Eisenhardt, 1989; Yin, 1994), in cui un'impresa guida ha messo in atto specifiche strategie miranti allo sviluppo dell'ecosistema, possa rappresentare un contesto di analisi e un esempio particolarmente utile per studiare l'interazione tra le traiettorie di sviluppo deliberate e quelle emergenti in modo spontaneo nell'ecosistema.

La piattaforma digitale izi.TRAVEL è stata lanciata al fine di favorire la democratizzazione della cultura. Pertanto, essa rappresenta un contesto virtuale tramite il quale ciascun individuo o organizzazione può esprimere la propria partecipazione culturale attraverso la condivisione di contenuti di vario tipo (per esempio audio, video, fotografici) o la libera fruizione di audioguide o audiotour creati e condivisi nella piattaforma da altri soggetti. La gratuità della fruizione dei contenuti, così come la libertà di pubblicare le storie create, evidenziano l'intento di democratizzare l'accesso alla cultura, favorendo la più ampia partecipazione di residenti, turisti e istituzioni culturali. L'intento di rendere la cultura accessibile e comprensibile ai più è reso efficace dall'individuazione dello storytelling (Bonacini, 2019, 2020) come strumento per la creazione dei contenuti audio, attraverso l'utilizzo di un linguaggio semplice, diretto e tale da essere facilmente compreso anche dai soggetti meno colti.

Coerentemente con l'obiettivo evidenziato, il management di izi.TRAVEL, sin dal lancio della piattaforma, ha favorito la ampia e libera partecipazione di tutti i soggetti interessati senza porre specifiche regole e limitazioni per l'accesso e per la condivisione e fruizione dei contenuti. La scelta di non sottoporre i contenuti da pubblicare ad una preventiva approvazione da parte del management di izi.TRAVEL, al fine di accertare la correttezza delle informazioni, è in linea con il rispetto della libera espressione culturale. Tuttavia, resta salva l'attivazione di un meccanismo spontaneo di controllo sociale tale per cui, i soggetti che dovessero notare inesattezze o informazioni errate nei contenuti pubblicati, possono segnalarlo consentendo così agli autori di rettificarli.

La progettazione ed il lancio della piattaforma digitale sono stati possibili grazie ad un cospicuo investimento iniziale effettuato dalla proprietà di izi.TRAVEL, che si è fatta carico nel tempo anche della copertura dei costi di gestione fino alla fine del 2016, quando la proprietà fu ceduta ad altri investitori. Attualmente, i costi correnti sono coperti in parte dalla proprietà ed in parte attraverso fonti di ricavo esterne, che includono: le percentuali incassate da izi.TRAVEL sui ricavi generati dalla vendita di contenuti a pagamento (che rappresentano comunque una quota residuale rispetto ai contenuti generalmente offerti in modo gratuito tramite la piattaforma); le sottoscrizioni volontarie effettuate annualmente dagli utilizzatori, a fronte delle quali è rimossa la visione di messaggi pubblicitari sul web e sull'app; le somme pagate da altre piattaforme distributrici dei contenuti a pagamento di izi.TRAVEL, in percentuale rispetto

all'ammontare complessivo delle somme corrisposte per i contenuti venduti.

Al fine di studiare il caso, sono stati raccolti diversi tipi di documenti tramite il web e l'azienda stessa, relativi al periodo dal 2015 al 2022. In particolare, sono stati consultati diversi white paper redatti da izi.TRAVEL, articoli sulle iniziative di promozione e divulgazione di izi.TRAVEL, video ed altri materiali disponibili sul web e relativi, ad esempio, ad aspetti operativi e didattici sul funzionamento della piattaforma, o ad attività promozionali per diffondere la conoscenza di izi.TRAVEL e le sue funzionalità. Sono stati inoltre consultati report, statistiche e dati messi a disposizione dalla stessa azienda.

Oltre all'utilizzo di queste fonti secondarie, lo svolgimento di interviste semi-strutturate ha consentito una chiara ricostruzione delle strategie e delle dinamiche di avvio e sviluppo dell'ecosistema di izi.TRAVEL. Tra il 2021 ed il 2023 sono state condotte 20 interviste a diverse tipologie di attori dell'ecosistema, tra cui: produttori di contenuti (ad esempio istituzioni culturali come musei o associazioni culturali); fruitori di storie pubblicate su izi.TRAVEL (ad esempio residenti, turisti, organizzazioni); promotori dei contenuti di izi.TRAVEL (ad esempio organizzazioni come alberghi o uffici turistici, che, pur non creando direttamente contenuti, favoriscono la conoscenza della piattaforma izi.TRAVEL tra residenti e turisti, incoraggiandone l'utilizzo); distributori di contenuti (ad esempio altre piattaforme digitali tramite cui gli utenti possono collegarsi e raggiungere i contenuti di izi.TRAVEL); fornitori indipendenti di servizi (ad esempio esperti nella creazione di contenuti digitali tramite la piattaforma e nello storytelling che offrono le proprie competenze professionali, attraverso attività di formazione, collaborazione e consulenza, a beneficio delle istituzioni culturali interessate a pubblicare contenuti culturali su izi.TRAVEL).

Le interviste sono state trascritte e sono state poi esaminate al fine di identificare le strategie messe in atto dal management di izi.TRAVEL. Partendo dalle risposte degli intervistati, sono stati individuati dei codici aperti (Gioia et al., 2013), classificati successivamente in categorie più astratte e riferite agli obiettivi e alle scelte strategiche perseguiti dal management di izi.TRAVEL nel tempo. In questo modo è stato possibile ricostruire i cambiamenti negli obiettivi e nelle azioni strategiche messe in atto al fine di costituire e sviluppare l'ecosistema; al contempo, l'analisi ha consentito anche di osservare chiaramente alcune dinamiche di cambiamento emergenti nell'ecosistema.

Risultati. *L'analisi dei documenti e delle interviste condotte ha portato a ricostruire il percorso evolutivo dell'ecosistema di izi.TRAVEL dal suo avvio.*

Inizialmente, il principale obiettivo del management di izi.TRAVEL era popolare la piattaforma digitale attraendo soggetti disposti a condividere storie e soggetti interessati alla loro fruizione, in modo da creare adeguati effetti di rete e risolvere il cosiddetto dilemma dell'“uovo e della gallina” (Caillaud, Jullien, 2003; Gallagher, Wang, 2002). Infatti, la presenza di un limitato numero di storie disponibili può rendere la piattaforma poco attrattiva per i potenziali fruitori e, allo stesso modo, la presenza di pochi fruitori può scoraggiare la creazione e condivisione di storie. In questa prima fase, pertanto, il management ha mirato ad attrarre da una parte, le istituzioni culturali come potenziali produttori di contenuti, dall'altra i soggetti potenzialmente fruitori di audioguide e audiotour.

Questo obiettivo è stato raggiunto mettendo in campo tre diverse strategie: 1) l'ingaggio diretto delle istituzioni culturali, in primis i musei, attraverso un gruppo di collaboratori - composto da account manager alle dirette dipendenze di izi.TRAVEL o operanti come agenti esterni - chiamati ad informare ed istruire le istituzioni culturali su izi.TRAVEL e le sue funzionalità, al fine di rendere questi soggetti capaci di creare storie e gestire il proprio profilo sulla piattaforma; 2) la creazione di campagne di comunicazione sui social network, miranti ad accrescere la consapevolezza degli individui sull'esistenza di izi.TRAVEL e sulle opportunità di fruizione e creazione di contenuti; 3) l'avvio di progetti di fertilizzazione a livello locale, uno dei quali svolto in Sicilia, condotti da manager dedicati e miranti ad ampliare la creazione di contenuti su izi.TRAVEL, attraverso il coinvolgimento di numerosi attori locali, tra cui musei, uffici turistici, siti archeologici, scuole. Responsabilità del manager era dunque attrarre, collegare, istruire e coordinare gli attori coinvolti nelle attività proposte nel progetto. Tali iniziative hanno consentito sia di divulgare la cultura dello storytelling come modalità di comunicazione culturale tra i più giovani, sia di diffondere le competenze legate alla creazione di contenuti digitali, favorendo la produzione di numerose storie tramite izi.TRAVEL. A titolo esemplificativo, in Sicilia la manager locale ha affermato che durante l'anno in cui il progetto di fertilizzazione è stato condotto (tra il 2016 ed il 2017) sono state create oltre 350 audioguide e più di 3200 storie geolocalizzate.

Avendo le strategie attuate mostrato la loro efficacia nell'iniziare a popolare la piattaforma di izi.TRAVEL attraendo produttori e fruitori di contenuti, ed innescando i desiderati effetti di rete, alla fine del 2016 il management cominciò ad avere una visione più chiara dell'ecosistema che si stava formando. In questa direzione, furono messe in atto ulteriori strategie miranti non soltanto a continuare ad espandere numericamente, ma anche ad incrementare la varietà degli attori coinvolti nell'ecosistema.

In questa direzione, vennero implementate strategie di ingaggio collettivo, attraverso la realizzazione di conferenze, workshop e incontri miranti a coinvolgere diverse tipologie di operatori del turismo, come hotel, fornitori di servizi turistici (ad esempio noleggio auto, trasporti locali, ecc.), uffici turistici, al fine di far loro conoscere izi.TRAVEL e di incoraggiarli a promuoverne l'utilizzo tra i loro clienti.

La strategia di espansione dell'ecosistema, attraverso l'incremento della varietà degli attori coinvolti, portò anche, a partire dal 2019, alla scelta di stabilire partnership con altre piattaforme digitali attraverso le quali rendere accessibili i contenuti di izi.TRAVEL. Tra queste vi è, ad esempio, Road.travel, una piattaforma tramite la quale vengono proposti itinerari di viaggio in auto. Così le piattaforme partner diventano attori dell'ecosistema, svolgendo il ruolo di “distributori” dei contenuti di izi.TRAVEL.

Quanto finora evidenziato mostra come le strategie messe deliberatamente in atto dal management di izi.TRAVEL

abbiano prodotto gli effetti desiderati, delineando l'assestamento e la legittimazione da parte del mercato dell'ecosistema di izi.TRAVEL. (Garud et al., 2022)

La nostra analisi ha inoltre consentito di identificare alcuni processi di cambiamento non deliberati da izi.TRAVEL, ma innescati indirettamente dalle strategie implementate. Mentre l'ecosistema si stava sviluppando, sorsero alcuni problemi legati ad un cambio del vertice proprietario ed alla improvvisa riduzione delle risorse finanziarie per supportare lo sviluppo dell'ecosistema. A seguito di tale criticità improvvisa, il management, all'inizio del 2017, dovette ridurre drasticamente la rete di account managers diffusi nel territorio.

Questa scelta necessaria per far fronte alle difficoltà economiche sopraggiunte, sorprendentemente non generò gli effetti negativi temuti sull'attività di izi.TRAVEL. Anzi, a seguito del licenziamento degli account manager, si attivarono in modo spontaneo ed inatteso dei meccanismi che diedero origine all'emergere di una nuova tipologia di attori nell'ecosistema, rivelatasi proficua per l'ulteriore sviluppo dell'ecosistema. In particolare, diversi ex account manager, una volta interrotta la collaborazione con izi.TRAVEL, decisero spontaneamente di restare ad operare nell'ecosistema, ma a diverso titolo, come fornitori indipendenti di servizi. Essi infatti decisero di offrire le loro specifiche competenze professionali direttamente alle istituzioni culturali, attraverso attività di formazione, di consulenza o di realizzazione dei contenuti da pubblicare su izi.TRAVEL. Questo meccanismo trasformativo spontaneo, attraverso cui soggetti prima sotto il controllo di izi.TRAVEL, iniziano a partecipare in modo indipendente nell'ecosistema, è stato da noi denominato "meccanismo di gemmazione". Esso ha dato origine alla formazione di una nuova tipologia di attori, appunto i fornitori indipendenti di servizi, che hanno dato un ulteriore impulso allo sviluppo dell'ecosistema favorendo le connessioni tra vecchi e nuovi attori. Un simile processo trasformativo è stato notato anche con riferimento al ruolo dell'ex manager del progetto di fertilizzazione locale in Sicilia che, conclusasi l'attività progettuale annuale finanziata da izi.TRAVEL, ha continuato, in modo del tutto spontaneo e indipendente, a sviluppare la rete di relazioni con e tra le istituzioni culturali del territorio siciliano, e ad avviare progetti volti a promuovere l'utilizzo della piattaforma izi.TRAVEL e a formare nuove professionalità nel campo dello storytelling digitale.

Limiti della ricerca. Sebbene consapevoli che l'uso di un singolo caso studio possa rappresentare un limite in termini di generalizzabilità dei risultati, riteniamo che il caso preso in considerazione possa comunque offrire interessanti spunti per l'analisi e la comprensione delle dinamiche di cambiamento anche di altri contesti di ecosistemi digitali, attraverso l'osservazione dell'interazione tra scelte deliberate e meccanismi spontanei di cambiamento e sviluppo.

Ricerche future potrebbero ulteriormente studiare i processi di formazione ed espansione degli ecosistemi digitali, investigando altre tipologie di meccanismi di sviluppo, gli elementi scatenanti e le implicazioni per lo sviluppo dell'ecosistema.

Implicazioni manageriali. Questa ricerca fornisce alcuni spunti per i manager, evidenziando come una appropriata orchestrazione della formazione e gestione degli ecosistemi digitali debba considerare l'importanza dell'interazione tra scelte strategiche deliberate e i meccanismi di sviluppo spontanei e pertanto difficilmente prevedibili. Tali processi, come ad esempio il meccanismo di gemmazione individuato dall'analisi del caso esaminato, dovrebbero essere accuratamente osservati e valorizzati, attraverso specifiche decisioni strategiche, al fine di ottimizzarne gli effetti a vantaggio dello sviluppo complessivo dell'ecosistema.

Lo studio inoltre evidenzia come anche risorse, che non sono direttamente controllate dall'impresa guida, possano contribuire allo sviluppo dell'ecosistema generando sinergie al suo interno. La consapevolezza di ciò potrebbe stimolare i manager a trovare le giuste modalità per beneficiare dell'azione degli attori indipendenti, realizzando efficaci sinergie per lo sviluppo dell'ecosistema.

Originalità del paper. Questo lavoro ha affrontato il tema degli ecosistemi digitali, focalizzandosi in particolare sulle prime e delicate fasi di avvio, ed analizzando l'interazione tra le strategie deliberatamente attuate da parte dell'impresa guida e le dinamiche di cambiamento emergenti in modo spontaneo nell'ecosistema.

I risultati dello studio evidenziano come processi di cambiamento spontanei nell'ecosistema, definiti come meccanismi di gemmazione, passano essere innescati, seppur indirettamente e senza una specifica intenzionalità, dalle strategie implementate.

In particolare, il meccanismo di gemmazione osservato nel caso di izi.TRAVEL ha determinato l'emergere di una nuova tipologia di attori nell'ecosistema, specificamente i fornitori indipendenti di servizi, che contribuiscono allo sviluppo dell'ecosistema, ad esempio, supportando e istruendo le istituzioni culturali nella creazione di contenuti su izi.TRAVEL, collaborando alla co-creazione di contenuti, formando i nuovi esperti nella produzione di contenuti digitali attraverso l'uso dello storytelling.

Questa ricerca offre alcuni interessanti contributi al dibattito scientifico sulle dinamiche di avvio e sviluppo degli ecosistemi digitali.

In primis, diversamente da precedenti ricerche che considerano la formazione dell'ecosistema come conseguenza di strategie deliberate dall'impresa guida (Adner 2017; Murthy, Madhok, 2021; Randhawa et al., 2022; Dushnitsky et al., 2022), questo studio pone l'attenzione anche sui processi di cambiamento spontanei che si possono verificare nell'ecosistema e che sono in grado di influenzarne lo sviluppo. In particolare, il lavoro identifica un meccanismo di sviluppo spontaneo denominato "meccanismo di gemmazione".

La ricerca evidenzia altresì come nessun attore dell'ecosistema, nemmeno l'impresa guida, possa avere il controllo completo sull'intero ecosistema (Marton, 2022), soprattutto nella fase di avvio in cui la proposta di valore stessa e il sistema delle relazioni tra gli attori sono in divenire. Tuttavia, diversamente da quanto evidenziato da studi precedenti, secondo cui la mancanza di controllo su risorse cruciali, controllate da altri attori, indebolisce l'impresa guida nel raggiungimento degli obiettivi strategici (Gawer 2014; Staub, 2021), il nostro caso mostra, attraverso il meccanismo di

gemmazione, come *izi.TRAVEL* abbia comunque potuto trarre un importante beneficio della presenza, nell'ecosistema, di risorse appartenenti ad attori indipendenti. Nello specifico, le competenze dei fornitori indipendenti di servizi, non più controllate da *izi.TRAVEL*, hanno generato un effetto sinergico nell'ecosistema, contribuendo di fatto al perseguimento dell'obiettivo di *izi.TRAVEL* di espandere l'ecosistema ed incrementare il valore creato. (Cennamo et al., 2023; Presenza et al., 2021; Reinsberg et al., 2023)

Inoltre, rispetto ad altre ricerche che hanno esplorato la formazione degli ecosistemi digitali (Alaimo et al., 2020; Cennamo, Santalò, 2013; Dushnitsky et al. 2022; Eisenmann et al., 2011; Gawer, Cusumano, 2008, 2014; Karhu et al., 2020; Kretschmer et al., 2022; Tan et al., 2015), questo lavoro pone l'accento in particolare sugli attori che partecipano all'ecosistema, consentendone il funzionamento efficace. A questo proposito, mentre precedenti studi hanno considerato specificamente le strategie rivolte agli attori principali dell'ecosistema, come ad esempio i produttori e fruitori di contenuti (Adner, 2017), il nostro lavoro sottolinea l'importanza di comprendere e valorizzare il ruolo che diverse categorie di attori possono svolgere, a vario titolo, nell'ecosistema, al fine di definire strategie miranti a coinvolgerli attivamente per la creazione di valore.

Infine, questa ricerca mostra come nuovi attori possano emergere ad un certo punto della vita dell'ecosistema (Murthy, Madhok, 2021), coesistere con gli attori già presenti, e operare in modo sinergico con essi contribuendo allo sviluppo complessivo dell'ecosistema. Ciò è in linea con le recenti ricerche nel contesto degli ecosistemi dell'innovazione, che evidenziano il ruolo degli attori non chiave, ossia gli intermediari dell'innovazione, che contribuiscono alla co-creazione dell'innovazione e alla facilitazione della formazione dell'ecosistema (Randhawa et al., 2018; Nenonen, Storbacka, 2020).

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Metaverse in social innovation: developing trends to support marginal areas sustainable growing

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Abstract

This study aims to illuminate several aspects linked to metaverse and social innovation within marginal areas growing. First, it underscores the collaborative relationship between the host community and the guest. Second, it demonstrates the presence of strategic bridging as a mediator. Third, it reveals how the metaverse can serve as both a strategy and a means of strategic bridging to facilitate relations between the host community and the guest.

Our initial analysis urges scholars and professionals to acknowledge the existing connection between guests and host communities. Within this framework, the metaverse concept is considered a strategic intermediary between these two parties. As suggested emphasized, within the metaverse context, a host community comprises the individuals or entities responsible for creating and overseeing virtual spaces, platforms, or environments. At the same time, guests are the users who interact with and explore these digital realms. Nonetheless, it is essential to note that there are numerous ways in which the metaverse can facilitate a connection between host communities and guests that warrant further exploration and validation.

Keywords: *metaverse; social innovation; marginal areas; sustainable growing.*

Framing of the research. *The rising importance of the ecosystem in the last decades has pushed different scholars and practitioners to analyse the conditions that create the existing bonds on which it is developed (Granstrand & Holgersson, 2020). The relevant literature argues that the ecosystem is: “a network of interconnected organizations, organized around a focal firm or a platform, and incorporating both production and use side participants, and focusing on the development of new value through innovation” (Autio & Thomas, 2014). This ecosystem term was born in biological studies that justified the “eco” feature with the impacts of this complex model characterised by People and Planet.*

On these bases, an ecosystem will be considered an interconnected network of individuals, organizations, resources, and institutions that collectively contribute to developing, adopting, and diffusing new ideas, technologies, and processes, producing solutions to economic, social and environmental needs. The importance of this ecosystem form lies in its ability to foster creativity, collaboration, and the overall advancement of society (Ritala & Almpantopoulou, 2017). First, the ecosystem sets the basis for structuring competitive advantage. Nations, regions, and organizations with solid innovation ecosystems gain a competitive edge in the global marketplace. Therefore, continuously innovating allows entities to stay ahead of the competition and respond effectively to changing market dynamics (Autio & Thomas, 2021). Secondly, knowledge-sharing and collaboration processes are boosted by the innovation ecosystem. Compared to the business ecosystem form, this model is prevalently based on an open innovation approach focused on exchanging knowledge and ideas among diverse stakeholders, such as entrepreneurs, researchers, educators, policymakers, and end-users (Vargo et al., 2015). Thirdly, entrepreneurship and startup growth are strongly promoted thanks to the development of the innovation ecosystem.

A supportive ecosystem provides an environment conducive to entrepreneurship. It encourages the formation of startups and enables them to access mentorship, funding, and resources essential for their growth and success (Granstrand & Holgersson, 2020). On the same line, it is clear that an ecosystem certainly sustains adaptability and resilience. Entities within the ecosystem are more likely to embrace change, respond to challenges, and pivot when necessary, ensuring long-term sustainability (Han et al., 2022); furthermore, these constant knowledge exchanges support SMEs in the innovation processes, reducing the innovation risks. At the same time, talent development can benefit

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from the reinforcement of the innovation ecosystem. Innovation ecosystems attract and retain a pool of diverse and talented components in different fields and diverse business sectors. The availability of skilled workers, researchers, and professionals contributes to the overall vibrancy and success of the ecosystem (Aarikka-Stenroos & Ritala, 2017).

Therefore, academics sustain that the ecosystem's real importance is that it plays a role as a catalyst for economic growth in developed, developing and underdeveloped areas (Autio & Thomas, 2021; Cobben et al., 2022). Innovation drives economic growth by creating new industries, generating employment opportunities, and increasing productivity (Izadi et al., 2020; Sartipi et al., 2021; Yousaf & Palazzo, 2023). Consequently, a vibrant ecosystem attracts investments and enables the development of a knowledge-based economy (Oh et al., 2016; Ritala & Almpanopoulou, 2017).

Starting from these premises, a thriving innovation ecosystem is essential for fostering creativity, driving economic growth, and addressing global challenges. It catalyses progress and ensures that societies and economies remain dynamic and resilient despite rapid technological and societal changes.

However, it is necessary to analyse how the ecosystem can apply its processes using strategic bridging to reach these goals. In this regard, stakeholder theory researchers consider the strategic bridge to be the ability to negotiate and build such social networks. This role, which could occur by a focal part or a platform, refers to situations in which one party links diverse constituencies to address some problem domain, such as corporate environmentalism (Stafford et al., 2000). Developing strategic bridging can involve aligning various goals and objectives within an organization or an entire ecosystem. This ensures that different actors share a mutual commitment towards common objectives, reducing silos and promoting collaboration and cooperation (Polonsky, 2001).

Moreover, academics highlight that strategic bridging can help integrate different stakeholders' needs and requirements, allowing for a more holistic approach to decision-making and resource allocation, especially when these resources are scarce (Park & Kohler, 2019). Besides, strategic bridging fosters adaptation to change in the subjects involved in the innovation ecosystems. In a rapidly changing business environment, strategic bridging can enable organizations/individuals/stakeholders to adapt more effectively. By connecting various elements of the business, leaders can respond to changes in the market, technology, or regulatory landscape in a coordinated and strategic manner (Shah, 2011). In addition, strategic bridging improves the decision-making procedures. It supports informed decision-making by providing a comprehensive landscape view, reducing complexity using reductionistic activities (Golinelli et al., 2012; 2015). This helps leaders/managers make decisions by considering broader implications and aligning them with the overall strategic direction (Stafford et al., 2000; Polonsky, 2001).

Having supported the relevance of strategic bridging in the development of an ecosystem, the effectiveness of this tool depends on the specific context and how well it is implemented within a particular scenario.

Regarding that, WEF (2023) claimed: "(...) The transformative power of technology cannot be denied, yet its application has both opportunities and challenges. At its core, the impact of technology, and thus the metaverse, is not solely defined by its capabilities but rather by collective behaviours, attitudes and approaches to its implementation. With the potential for significant disruption across industries, it is important to consider the implications of the metaverse on individual and collective well-being..." (<https://www.weforum.org/publications/social-implications-of-the-metaverse/>).

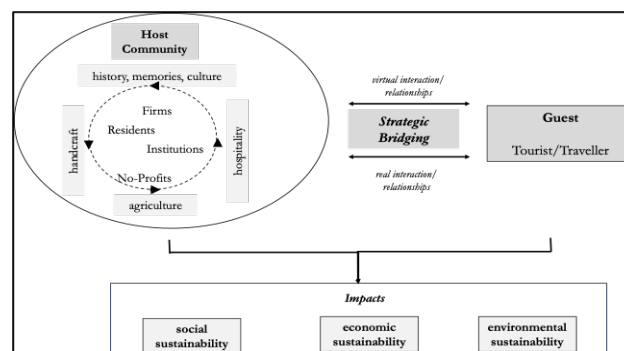
Consequently, the scope of this study is to deepen the role played by new digital dimensions and the metaverse, both as a strategic bridge supporting the social innovation phenomenon and as a strategy that can be implemented in different innovation ecosystems to foster economic, social and environmental impacts.

Purpose of the paper. The present research will shed light on different items: (i) first of all, it will highlight the existence of a positive relation between the host community and guest; (ii) secondly, it presents the existence of the mediating role of strategic bridging; (iii) thirdly, it shows that metaverse can be considered both a strategy and a strategic bridge to mediate the relations between the host community and guest.

This paper has the following structure: We present a brief review of related literature and hypotheses regarding strategic bridging, innovation ecosystem, and the new role that the metaverse can attain. Next, we describe the method. Afterwards, a case study is described to test the research hypotheses, followed by discussions, managerial implications, theoretical contributions, conclusions, limitations, and potential research directions.

The following sections describe the nexuses between the selected concepts, and the research hypotheses are shown in a conceptual model (see Figure 1).

Fig. 1 Conceptual framework. Analysing the role of metaverse as a strategy of strategic bridging



Source: Elaboration of Basile et al., (2021a)

Methodology. *The present research analyses the Albaredo per San Marco case study to support the conceptual purpose. Albaredo is a mountainous little village in the Lombardia Region (Italy), with almost 300 inhabitants. The village has been depopulated and aged in the last decades, and the welfare and economic conditions have decreased.*

The Albaredo per San Marco's project is associated with the area or community of Albaredo per San Marco. This could be a specific initiative, development plan, or undertaking to improve or enhance various aspects of the locality or its surroundings. The nature and scope of the project would depend on the specific goals and objectives set forth by the community or relevant stakeholders.

Albaredo per San Marco's project aims to introduce tourists to the village through a cultural entertainment game, "immersing" them in scenes of daily life, which tell of traditions, historical moments, habits and customs of the place, creating the relation between host and guest. The project is articulated in 12 stages, which can be activated via QR Code, which will lead the visitor to discover the secrets of the ancient village with quizzes and puzzles in a beautiful "journey" between present, past and future. An important push, therefore, for relaunching internal areas little known to tourists. Through the metaverse, considered in its mediating role, the territorial agents can promote places of great beauty, steeped in centuries-old traditions but unknown to most. This allows us to conserve traditions, historical culture, food, and wine identity. With this new technology, it is possible to plan territorial strategies of social innovation in growing economic sectors by involving visitors in peer-to-peer processes of "living a like local" projects, creating an attraction that directs tourist flows towards these unknown destinations (Basile et al., 2021a; Vrontis et al., 2021).

Results. *Social and environmental problems are complex, and many potential ecosystem participants lack the necessary know-how to integrate appropriate environmental and social behaviours with their objectives; for these reasons, strategic bridging is increasingly becoming useful to support the ecosystem's emerging steps (Basile et al., 2022).*

The strategic bridging agents forward their ends while connecting all stakeholders (Westley and Vredenburg 1991). Park and Kohler (2019) argued that within the sustainable tourism field, innovative value co-creation models are based on stakeholder theory and knowledge management using crowdsourcing platforms in their application.

In recent years, the most studied case has been the travel2change platform, which aims to connect travellers with the local community to create a positive impact (<https://travel2change.org/about/>).

On this wave, tourism destinations and service providers are increasingly embracing, supported by new technologies, open innovation, crowdsourcing, and crowdfunding models to develop new attractions and services, allowing the process of value co-creation among local community, tourists, and other stakeholders (Egger et al., 2016; Hjalager & Nordin, 2011; Lalicic & Dickinger, 2017). Within these peer-to-peer marketplaces, residents, tourists, traditional suppliers, platform providers, and policymakers are increasingly co-creating the tourism experiences, and in so doing, they transform and redefine the values, motives, reasons, and ways in which people travel and experience tourism (Sigala, 2015).

Therefore, the tourist model, proposed in Figure 1, is considered a way for travellers to feel like a local, becoming a component of the local community and a social and environmental solution seeker before the travel experience (McCool and Martin, 1994; Basile et al., 2021b).

The model reflects the growing practice of collaborative consumption and contextualizes this view (Belk 2014). Collaborative consumption implies various forms of resource redistribution among individuals and is viewed as an alternative consumption mode that offers value with less cost (Botsman and Rogers 2010; Gansky 2010; Lamberton and Rose 2012; Sacks 2011).

Regarding this trend, UNWTO claims the "Engage, Share, Collaborate!" model in SDGs implementation regarding collaborative relations and sustainable tourism. Four points characterize this model: 1) shape better tourism policies; 2) foster partnership and improve resource allocation; 3) increase tourism competitiveness; and 4) be a better and responsible traveller (<https://tourism4sdgs.org/> last access 18 August 2023).

This approach, considering also the travel2change example, highlights the role of platform and/or agents considered in stakeholder theory as a strategic bridging aimed to stimulate co-creation and cooperation and to provide a viable environmental solution when diverse stakeholders are unable to negotiate or cooperate freely due to mistrust, tradition, or logistic problems or when there is a need for a third party to restore a balance of power, resources, and expertise.

This evolution in the relations between the local community and guests finds its starting point and final goal in increasing tourists' use of peer-to-peer solutions, such as accommodation rentals, as a low-cost alternative to hotels. This scenario characterizes the sharing economy, where collaborative consumption allows people to create and maintain social connections by directly interacting with hosts (i.e., residents) and connecting with local communities by exchanging reciprocal cultural traits (Guttentag 2013).

Research limitations. *The conceptual model must be tested in different sectors and countries to enhance the findings' generalizability. To enhance comprehension regarding the context-specific challenges faced by organisations across various industries and business environments, quantitative and qualitative methods can be employed for testing the framework.*

Managerial implications. *Our findings push academics and practitioners to consider the existing link between guest and the host community. In this scenario, following Autio & Thomas (2014), the metaverse concept is a strategic bridge, a platform, between these two players. As highlighted before, in the context of the metaverse, a host community refers to the individuals or entities that create and manage virtual spaces, platforms, or environments. At the same time, guests are the users who engage with and navigate these virtual realms (Park & Kim, 2022). However, it must be highlighted*

that there are several ways in which the metaverse can act, or just is acting, as a bridge between host communities and guests that still need to be explored and tested.

Originality of the paper. This work proposes an initial research agenda that can guide future researchers and scholars in this area of research.

First, it is important to analyse whether the metaverse can foster cultural exchange (Koo et al., 2023). The metaverse allows for the creation of diverse and immersive virtual environments representing different cultures, traditions, and communities. Therefore, there is a need to explore how users (guests) can use and engage with these virtual spaces, leading to cultural exchange and understanding.

Secondly, the metaverse implies new economic opportunities (Kye et al., 2021). Host communities can leverage the metaverse for economic activities like virtual commerce, real estate, and services. Thus, future research should focus on how guests can participate in these virtual economies, contributing to the prosperity of host communities and fostering economic collaboration.

Thirdly, the metaverse completely redefines the spread of social interaction (Park & Kim, 2022). The metaverse provides a platform for social interaction and collaboration, enabling individuals from different geographic locations to connect. Indeed, managers and scholars need to expand their knowledge about how host communities can facilitate events, gatherings, and activities within this virtual space, creating opportunities for guests to socialize and build relationships.

Finally, the upsurge of the metaverse raises the problem of analysing how practitioners and academics can bridge physical and virtual worlds (Koo et al., 2023). It is very well known that Augmented reality (AR) and virtual reality (VR) technologies can be used to integrate elements of the metaverse into the physical world. However, it is still being determined how this seamless integration enhances the connection between host communities and guests, creating a fluid transition between the physical and virtual realms.

Following the agenda, future research will address issues facing metaverse growth and its important role in strategic bridging. Moreover, recommendations for coordinating the two sides of the same coin (host community-guest) must be further developed.

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Harnessing Digital Technologies for Knowledge Management in Luxury Hospitality: the cases of Grand Hotel et de Milan and STRAFhotel&bar

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Abstract

Organizations that recognize the value of knowledge as a strategic asset and invest in knowledge management processes (KPMs) are better positioned to succeed in today's dynamic and competitive business environment. Knowledge fuels innovation, enables organizations to adapt to market conditions, and encourages creativity and problem-solving, driving continuous improvement and growth. Digital technologies (DTs) are crucial in supporting knowledge management (KM) initiatives by providing tools and platforms to facilitate knowledge acquisition, creation, storage, sharing, and application. Nevertheless, scant research has focused on the role of DTs in enhancing and facilitating KPMs in hospitality studies, which have prioritized the consumer perspective on digitalization, focusing on travellers' knowledge acquisition and sharing through digital tools facilitating their information search and decision-making.

This ongoing research aims to contribute to the academic debate on digital transformation and KM in the hospitality industry, adopting the organization's perspective. The focus is on deepening the understanding of the role of DTs in facilitating KMPs, giving an answer to this research question: How and to what extent do DTs facilitate organizational KMPs?

To address this research question, a qualitative exploratory study is carried out. Two luxury international hotels in Milan (Italy), owned by the Bertazzoni family, are currently under investigation: Grand Hotel et de Milan and the STRAFhotel&bar. Luxury hotels (LHs) present several peculiarities that support investigating these cases. Luxury represents a significant segment of the general hospitality industry with increasing growth in occupancy, average daily rate, and nominal revenue per available room. Recent crises have significantly impacted the hospitality industry, with luxury hotels facing unprecedented challenges. However, these players have proven their resilience, adaptability, and commitment also in terms of the ability to redefine luxury in the face of adversity. LHs are also recognized as better equipped to adopt innovative practices and invest in digitalization.

A case study method is adopted to achieve an extensive and in-depth exploration towards theory building. The collection of primary and secondary data began in December 2023. An interviewing process will involve top and middle managers at the two hotels and is expected to conclude in May 2024.

Preliminary findings give interesting insights revealing that the two luxury hotels remain human-centred organizations, and the "human touch" and human purposes mediate the role of the adopted digital tools (i.e., a business intelligence platform and a digital twin). The research reveals that human and organizational factors mediate the role of DTs in facilitating KMPs despite their potential disruptive role per se. In the last section, some preliminary reasonings are proposed, integrating key aspects hospitality researchers have neglected and that can address future research avenues on exploiting DTs for KM in luxury hospitality.

Keywords: *digital technologies; knowledge management; knowledge management processes; knowledge sharing; luxury hotel.*

Framing of the research. *Digital transformation has become a hot topic and a priority for researchers and practitioners (Vial et al., 2019). All the sectors, including the hospitality industry, are "experiencing a wave of digital disruption that threatens to restructure some traditional business models and make others obsolete" (OECD, 2018, p. 9). Academics, practitioners, and industries have mythologized technology as an all-encompassing approach and solution*

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for business challenges and societal imbalances undervalue the pitfalls of a myopic technology-isolated vision (Pasquinelli and Trunfio, 2023). Although digitalization and digital transformation represent consolidated areas of investigation and research underlined technologies' role in business, several dark sides of digital transformation and areas of improvement remain unexplored in academic investigation (Trunfio et al., 2022; Ozdemir et al., 2023).

Vial (2019, p. 118) maintains that digital transformation "creates disruptions triggering strategic responses from organizations that seek to alter their value creation paths while managing the structural changes and organizational barriers that affect the positive and negative outcomes of this process". The breadth with which this phenomenon manifests itself is expressed in different ways, such as the power of advancing traditional services and creating new business models (Tajeddini et al., 2017; Alford and Duan, 2018).

This deep change requires all organizations to exploit DTs, defined as "combinations of information, communication, computing, and connectivity technologies that are fundamentally transforming business capabilities" (Bharadwaj et al., 2013, p. 471).

At the same time, creating a robust new digital business model requires the combination of DTs and supporting capabilities. In fact, focusing only on the ICT adoption process without considering business model adjustments and organizational re-structuring and re-design can even lead to an overall decrease in productivity. As the notion of transformation states, digital transformation is about change management, defined as "the process of continually renewing an organization's direction, structure, and capabilities to serve the ever-changing needs of external and internal customers" (Moran and Brightman, 2001, pp. 111). Transforming the organization to benefit from smart technologies implies changing the organizational culture, introducing new ways of thinking and working, and building capabilities not only to match the changes in the marketplace (Parviainen et al., 2017).

Therefore, knowledge is a critical asset for organizations when dealing with fast and continuous change. Knowledge impacts innovative behaviours and creativity, the ability to personalize and the staff's reactivity to guests' needs and requests (Lim et al., 2021). KM is made by the different processes that create value from organizations' intangible assets, improving firms' performances and competitiveness (Leoni et al., 2022; Zaim et al., 2019; Liebowitz, 2004).

Looking at the specific hospitality context, recent literature devoted increasing attention to the disruptive power of DTs, focusing on their impact on consumers (e.g. experiences and behaviours) and highlighting the need to expand insights into the organizations' functioning (e.g. strategic responses, leadership, and processes).

Companies must continuously improve their competencies by absorbing and generating new knowledge to address the digital transformation to gain and maintain a competitive advantage (Ghasemzadeh et al., 2022). The digital revolution has dramatically changed the operation and management of hotels, and the applications of DTs are deeply transforming how hotels manage their operations and value chains (Mingotto et al., 2021) to achieve better financial performance, competitiveness, quality of service, resource utilization, flexibility, and innovation (Ivanov et al., 2020; Lenuwat and Boon-itt, 2021). Consequently, they are recognized as the primary sources of efficiency and competitive advantage in the hotel sector (Shin et al., 2019).

Various theoretical and empirical studies have elaborated on the applications of DTs in the hotel sector (Ivanov et al., 2020). Accordingly, there are contributions of a wide range of DTs, such as big data analytics (Antonio et al., 2019), social media (Gupta, 2019), self-service technologies and robots (Liu and Hung, 2020), virtual reality (Leung et al., 2020), front desk technologies (Shin et al., 2019), and mobile apps (Lee, 2018). However, there is a lack of understanding of their critical role in the hotel's KMPs (Geisler and Wickramasinghe, 2015), such as knowledge acquisition, creation, storage, sharing, and application (Alavi and Leidner, 2001; Heisig, 2009; Schiuma et al., 2012).

As stressed by Gürlek and Koseoglu (2023), hospitality researchers have neglected the role of DTs in enhancing the value of the KMPs. A recent bibliometric review of KM in hospitality (Fauzi, 2023) revealed that studies on DTs from a consumer perspective largely prevail, focusing on travellers' knowledge acquisition and sharing through digital tools facilitating their information search and decision-making. Thus, limited scholars' attention to the DTs' impacts on the organization and its KMPs emerged.

Furthermore, previous research has focused predominantly on knowledge sharing - considered at the core of organizations' success, growth, and innovation (Lim et al., 2021; Yang et al., 2022) - ignoring the other KM processes and, therefore, providing a limited understanding of the overall phenomenon.

In the hospitality context, knowledge sharing was proved to directly impact performance, learning, adaptability, radical innovation, and employee satisfaction. While scholars dedicated significant attention to the outcomes and consequences of knowledge sharing, less clarity was reached about the factors facilitating knowledge sharing at the employee and organizational levels (Lim et al., 2021). Not only employees' characteristics (such as skills, existing knowledge, motivation, and interpersonal relationships) but also the organization's effort to boost knowledge-sharing behaviours (such as the building of shared goals, trust, organization climate and culture, and leadership) are predictors of knowledge sharing (Lim et al., 2021). Interestingly, digital technology investments, adoption, and the underpinning of a digital transformation process at the organizational or ecosystem level did not emerge among the investigated factors.

Purpose of the paper. This ongoing research aims to contribute to the academic debate on digital transformation and KM by adopting the hotel organization's perspective, which is an under-investigated area of research. It addresses this research question: How and to what extent do DTs facilitate organizational KMPs? As an exploratory study, it sheds light on how and to what extent hotel organizations are exploiting DTs to enhance the value of the KMPs.

The paper focuses on the context of luxury hotels upon which "sporadic research could be found" (Chu et al., 2016, p. 2). A luxury hotel can be defined as "a hotel that is unique and superior in quality and that provides excellent service, symbolizing the wealth and status of its patrons" (Peng & Chen, 2019, p. 1375).

We decided to focus on this sector because it represents a pivotal element of the tourism business system. The luxury travel market is the fastest-growing segment of the travel industry worldwide (Demir & Saribas, 2014), and luxury hospitality has the third largest market share in the global luxury goods industry (Amatulli et al., 2021).

Methodology. A qualitative approach based on two case studies is adopted in this study. It draws on a qualitative inquiry because it is consistent with the exploratory nature of the case study and well suited to answering “how” questions (Yin, 2018). Hence, it provides an extensive and in-depth exploration (Christou et al., 2019) as well as a better understanding of a scarcely researched topic with no clear theoretical basis (Rodell et al., 2020), allowing for theory building (Eisenhardt and Graebner, 2007).

The study focuses on two international luxury hotels in Milan (Italy) owned by the Bertazzoni family: Grand Hotel et de Milan and its sister property, STRAFhotel&bar. The two selected cases allow an in-depth understanding of two distinct organizations while providing the opportunity to trace connections and synergies in digitalization and KM under the same proprietary umbrella. This group has been selected for the innovative vision that reconciles the luxury hotels’ human touch and guest attention with the exploitation of DTs for strategic, organizational, and managerial changes.

The Grand Hotel et de Milan, a luxury five-stars hotel, is a member of The Leading Hotels of the World. Located in the Montenapoleone district, it is an iconic building that has preserved Milan’s cultural history since 23rd May 1863. Several of the greatest artists sojourned for a long time in this hotel, such as Verdi, Caruso, Callas, Hemingway, D’Annunzio and Nureyev. The STRAFhotel&bar is a Design Hotels member located close to Duomo square. It shows its innovative character, combining art, creativity, design, and fashion.

The collection of primary and secondary data began in December 2023. To collect primary data, the authors are performing semi-structured interviews, which are the right compromise between formality and informality (Qu and Dumay, 2011). An interviewing process will involve top and middle managers at the two hotels, and it is expected to conclude in May 2024. The semi-structured interview protocol is organized into five parts (Castillo-Montoya, 2016):

- i) participants are informed about the study’s aim;
- ii) authors interview respondents starting with profiling questions (e.g., their specific job role, the year of experience in the hotel and the industry);
- iii) the interviews shift towards more study-objective specific questions. After a round of open questions concerning KMPs and the adoption of DTs, leaving the interviewees free to elicit and prioritize salient information from their perspectives, a structured theory-based grid intersecting KMPs and DTs is shared with the interviewees to fully map and discuss tools and processes. This procedure helps avoid introducing researchers’ biases in the interviewer-interviewee relation during the interview while helping the interviewees consider all tools and processes considered by the academic conceptualizations of the object of analysis;
- iv) participants are encouraged to provide examples;
- v) participants are invited to provide additional comments.

A verbatim transcription process is carried out for all the interviews to improve the research’s reliability, validity, and trustworthiness (MacLean et al., 2004). The analysis of transcripts - and the triangulation with other sources - is conducted through a mixed thematic method (Braun and Clarke, 2006).

Results. This exploratory research proposes fresh knowledge in the academic debate on digital transformation and KM by adopting the perspective of hotel organizations that have been under-investigated. Findings suggest some preliminary insights integrating key aspects that have been neglected in hospitality research and can address future research avenues on exploiting digital technologies for KM in hospitality.

The case study sheds light on how and to what extent an innovative Italian hotel group is introducing a business intelligence platform and a digital twin to deploy KMPs that enhance organization coordination, transparency, and efficiency and, then, improve the individual performance of employees and managers, as well as the overall organization.

Firstly, the research suggests the business intelligence platform as a knowledge-integrated architecture that exploits the power of digital technology to enhance the value of knowledge processes and address organizational changes. As preliminary findings suggested, the adoption of a business intelligence platform drives organizational changes, such as developing a shared culture of innovation, redefining strategic priorities, and defining decision-making processes based on an up-to-date dashboard for forecasting and monitoring.

In an early implementation stage, the business intelligence platform in the two hotels has demonstrated its role in internal and external knowledge acquisition, creation, storage, sharing and application for decision-making. As the case revealed, the business intelligence platform exploits information systems to enhance the value of KMPs.

Secondly, findings revealed insights that can advance research on hotel organizations’ shared culture of innovation and leadership in innovation. The key aspect is the human resources involvement (bottom-up co-creation) in building the business intelligence platform. As emerged in the study, the leadership of the innovative projects (the Chief Financial Officer and Chief Operating Officer) addressed the digital platform building through human resources training and involvement in the ICT architecture definition and adoption.

Thirdly, digital innovation has entered the Grand Hotel et de Milan through a recent investment in digital twin technology. Mapping all areas of the hotel (front-office and back-office) in 3D and visualizing every object in real-time (respecting human privacy) allows indoor navigation to inventory all historical furniture and artwork, preserving the hotel’s cultural heritage.

As the case suggested, hotels can enhance operation efficiency with the use of the digital twin, exploit monitoring of several operations through specific dashboards and acting preventive maintenance and saving expenses (e.g. energy consumption of the rooms by enhancing the staffing efficiency, reducing lighting and temperature during specific days and hours, etc.). After the dashboard visualizes specific insights, the physical object's parameters, procedures, or maintenance plans can be modified automatically or with human support.

Digital twins create value for property and managers. Within the digital threat, innovation involves operations processes and capitalizes on KM. The virtual environment becomes a significant source of data, which are stored, shared, extracted, and used for several purposes to support operations in real-time. Human resources and managers can draw massive amounts of in-hole data from virtual environments and correlated dashboards to increase the efficiency and efficacy of the internal process and control operations in real-time.

Last but not least, as the interviews underlined, the LH remains a human-centred organization in Italy, and human touch and human purposes mediate the role of specific digital tools. The research reveals the mediated role of digital technologies in hospitality management, confirming that the luxury hospitality industry remains human-centred despite the disruptive role of innovative technologies in other sectors (e.g., online experiences and immersive museum experiences). Organizational changes such as leadership, culture of innovation and human resources management (e.g. training, motivation, and involvement) drive the disruptive role of digital transformation.

As the interviews suggested, investing in digital transformation allows addressing work-life balance by saving time and enhancing motivation. By enhancing effectiveness, the virtual environment and other DTs facilitate management processes and the achievement of operational performance goals, boosting revenue and maximizing employee efficiency and motivation. This approach enhances the awareness of knowledge value for organizational innovation, competitiveness, and well-being, as well as the diffused attitude to create and use the knowledge for decision-making. Besides, it creates a learning process that continuously improves new competencies to capitalize on organizational knowledge and drive changes.

Research limitations. Its greatest limitation consists in its still immature nature. Being a work-in-progress project, it still manifests all its weaknesses, including an incomplete theoretical framework and limited primary data. Despite that, the case is promising for the ongoing technology investments the group is making and for the empirical feasibility due to the management's interest in collaborating with the research group. The expected challenge in the empirical analysis is to maintain a clear-cut separation between the actual KM processes (and the role of DTs) and the expectations that the interviewees - involved in the digitalization process - have about these. This issue will be addressed by involving staff members in different hotel positions to achieve diverse observation angles on KM.

Managerial implications. This exploratory inquiry contributes to a research agenda with a high potential in terms of managerial implications. Hotels can capitalize on digital transformation to drive organizational changes, which will impact efficiency and operational performances and facilitate processes, boosting revenue and competitive advantages.

Besides, DTs can enhance the value of the KMPs, employee efficiency and motivation. This research results will give direction to future research testing the role of DTs in KMPs and open further scholars' engagement with the tensions and pitfalls that digitalizing KMPs may face in practice.

Originality of the paper. Although KM has been a crucial concern in the hospitality industry for decades and the pandemic made its adoption even more urgent, the academic research on KMPs and the development of a KM perspective on the hospitality research agenda is still lacking (Fauzi, 2023). In contrast, it may contribute to diverse relevant tourism agendas, such as innovation, sustainability, and digitalization (Fauzi, 2023), potentially playing a pivotal role in explaining their intertwining mechanisms. In this vein, this is the first study that simultaneously addresses DT adoption within KMPs in the hospitality context by adopting the perspective of hotel organizations and human resources that have been under-investigated. It offers preliminary results on digital transformation for KM and decision-making (Fauzi, 2023; Gürlek and Koseoglu, 2023) in the hospitality industry, complementing consumer perspective studies, which focus on digital transformation for guest relations, experiences, engagement, and satisfaction. The study offers insights into KM value for organizational innovation, competitiveness, and well-being.

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Cultural Heritage Management in Museums: The Open Culture Dilemma

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Abstract

This study sheds light on the notion and practice of open culture in museums and, particularly, the management of the open culture dilemma that arises when cultural heritage institutions tackle copyright law in their decision-making and practices regarding the access and use of their collections in the digital era. Following a two-step research design including a systematic literature review and focus group discussion and validation, this study provides a matrix of museums' open culture management that, ultimately, can represent a benchmark for practitioners to assess their positions in the open culture environment and make informed decisions and actions. Such insights can also enhance scholars' interest and understanding of the open culture dilemma as an emerging research area in museum management literature.

Key words: Museums; cultural heritage management; open culture dilemma; matrix; scale; benchmark

Framing of the research. Museums are prominent and permanent cultural heritage institutions that constantly deal with cultural heritage management (CHM), defined as “the art, vocation, and practice of managing cultural heritage resources” (Styliadis, 2009, p. 296), to perform their mission of serving society (Barrio-Tellado et al., 2023; Roussos & Stamatouidi, 2022). This mission has undergone a striking evolution, reflecting new scenarios and evolving needs. Museums have become agents of social change (Cameron, 2019; Sandell, 2003; Watson et al., 2021) who provide a venue for all (ICOM, 2011) and advocate human rights (Blumer, 2015; Carter, 2019), including the universal right to access culture and participate in cultural life. Increasingly, they strive to reach a broader audience (Palumbo, 2023) by offering an active physical and digital learning environment (Hooper-Greenhill, 2013; Palumbo, 2022) and exploring market-service opportunities (Camarero & Garrido, 2012; Ekström, 2019), while also seeking sustainability (social, environmental, and economic) goals and participatory governance (UNESCO, 2021; Ubertazzi, 2022).

Performing such a pivotal role, museums steadily use advanced digital technologies (Falomo Bernarduzzi et al., 2021; Markopoulos et al., 2021) reinforcing their potential endeavours in Open Culture (OC), defined as “the freedom to access, use, and modify culture, subject, at most, to measure that preserve provenance and openness” (opendefinition.org) and endorsed by widespread initiatives such as the OpenGlam movement (openglam.org). However, several factors hinder museums from embracing these principles, shaping an open cultural dilemma on whether and to what extent they should open up. Notably, they often face a lack of technical skills (Not & Petrelli, 2019), managerial capabilities (Komarac et al., 2015) and legal awareness (Markellou, 2023), particularly on copyright issues (Purday, 2010; Terras, 2015), which could otherwise support museums in their drive towards openness.

While recognising that the concept of open culture management is still evolving, it is noteworthy that the literature on this topic still needs to be fully explored. Additionally, it often reflects a predominantly Western perspective (du Cros, 2021; Onyemechalu & Ugwuanyi, 2021). This gap underscores the need for a comprehensive approach to open cultural management, addressing its social (Fatorić & Daly, 2023), cultural (Li et al., 2020), and economic (Bonioti, 2021) implications.

Purpose of the paper. To address this literary void, this study takes an interdisciplinary perspective intersecting management and copyright to shed light on the notion and practice of open culture in museum management and contribute to managing the open culture dilemma that arises when museums tackle copyright law in their decision-making and practices regarding the access and use of their collections in the digital era.

Methodology. Our research design is based on two interconnected steps combining a systematic literature review (SLR) and an exploratory focus group discussion and validation of the theoretical constructs around open culture management in relation to copyright.

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Systematic literature review. The SLR on managing the open culture dilemma was conducted on the Web of Science (WoS) and Scopus databases. WoS domains included management, law, hospitality, art and sport, leisure and tourism, anthropology, social psychology, and sustainability science. In Scopus, we selected business, management, social sciences, and accounting domains. We only included peer-reviewed articles written in English and published before the end of April 2023. Going through the standard steps in the PRISMA framework (Moher et al., 2009), the final sample included 124 studies. We performed descriptive statistics (Siemieniako et al., 2021), keyword co-occurrence analysis (Mariani et al., 2023), and content analysis (Cruz-Cárdenas et al., 2021) on the sample. Descriptive statistics were calculated on an Excel spreadsheet of data to provide an overview of current knowledge in the field and its evolution, including the domains of the articles, main concepts, trends and emerging themes, the author's country of origin, and country of analysis. Using VOSviewer 1.6.19 software and including terms with at least three co-occurrences, we depicted clusters of co-occurrence keywords. In manual content analysis, key issues related to the open culture dilemma in contemporary cultural heritage institutions were identified and assessed, whether they were related to culture management or copyright. Subsequently, issues were organised into a matrix based on their shared features.

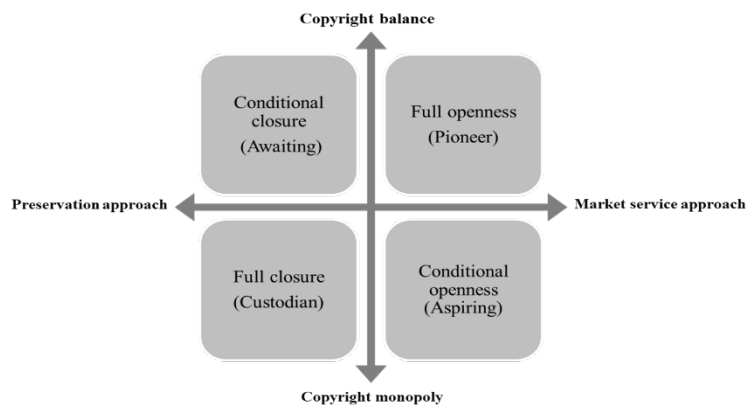
Focus group. The focus group is a qualitative research method widely used to promptly gather insights and opinions from a convenience or purposive sampling of informants on a specific topic or issue (Kitzinger, 2005; Maitiniyazi & Canavari, 2020). Rigorous focus group design and protocol (Stewart et al., 2007) ensure the validity and reliability of data collection and mitigate focus group reliance on non-probability sampling and the potential for moderators to influence participant responses (Prior, 2018). We adopted a semi-structured approach (Aitken et al., 2021) to focus group design combining structured questions with open unstructured discussions on the current conceptualisation of CHM in relation to copyright emerging from the previously performed SLR (Moher et al., 2009). We developed questions for facilitating focus group discussion, especially around what open culture means to the participants and how they propose to handle it. Questions include: To what extent are museum managers aware of the open culture dilemma? How can museums identify and solve the problems related to open culture? And how can a derived theoretical matrix be implemented to handle the open culture dilemma? The purposive sampling of participants (Stewart et al., 2007) included 8 experts on the topic investigated (Barbour, 2018) selected according to several criteria: (1) having at least 10 years of professional experience in open culture management; (2) being advocates of open culture, especially the museum sector; and (3) being broadly involved in the discussion of open culture dilemma. The focus group lasted 90 minutes and was audio recorded with participants' permission. By using Braun and Clarke (2006)' thematic qualitative methodology to interpret focus group content, the data collected were transcribed and independently analysed, and coded by the authors to extract research themes and items that were organised into clusters and patterns between items. Unlike other methods, this thematic analysis allows a deeper and applied understanding of research problems without requiring inter-coder reliability, coding frames, or theoretical frameworks (Braun & Clarke, 2021).

Results. Systematic literature review. The co-occurrence and content analyses of the body of literature revealed convergent-divergent managerial and legal approaches to OC management in relation to copyright, denoting areas of convergence, divergence and ambivalence to OC. Convergence occurs when both copyright and managerial approaches align to openness or closure. Instead, divergence occurs when they are unaligned, one inclined toward openness and the other toward closure (and vice versa) (Figure 1).

The convergence towards a "full openness approach" is defined by the combination of museums' market-service orientation in the physical and digital environments (Palumbo, 2022; Trunfio et al., 2021) and copyright balance (Senfileben, 2004; Zemer, 2006). In this case, the many can freely access, use, and modify culture with the least possible restrictions. Instead, the "full closure approach" is defined by cultural institutions' custodial preservation models (Gilmore & Rentschler, 2002) and copyright monopoly (Troy, 2017). In this case, museums and copyright law maintain control over culture and knowledge.

The divergence between legal and managerial perspectives identifies "conditional openness" and "conditional closure" approaches. Despite museums' market service orientation, copyright monopoly entails challenges that ultimately shape a "conditional openness" approach, leading, for instance, to opening only a limited part of their collections (Booth et al., 2021). On the contrary, the "conditional closure" approach occurs when museums opt for custodial preservation, despite copyright balance that would allow them to open. In this case, museums operate in a better copyright environment. However, they are still reluctant to open due to managerial reasons, e.g., reluctance to change and lack of skills (Bertacchini et al., 2018).

Figure 1: Matrix of Open Culture Management approaches in relation to copyright



Source: Authors' elaboration

Focus group. The focus group content analysis allowed us to validate and develop the approaches to OC in relation to copyright, providing themes and items describing museums' open culture management practices (Table 1) associated with these approaches (Figure 1) and identifying museums' OC management categories (pioneers, custodians, aspiring, and awaiting).

The museums adhering to a full openness approach, are "Pioneers" in adopting a market service orientation and aligning with copyright balance. They have an improved understanding of the open culture dilemma and adapt as much as possible to take advantage of OC opportunities. Thanks to their capabilities and skills, pioneers effectively manage and share digital content, encompassing aspects like building stakeholder relationships, ensuring transparency, developing digital skills, navigating copyright opportunities, and engaging with the open movement.

"Custodians" are museums adhering to a full closure approach, fastened to a preservation approach while also constrained by copyright monopoly. These museums focus on their conventional mission of preserving cultural heritage and identify themselves as gatekeepers. Due to the lack of managerial and technological skills, they have concerns over losing control over culture and face challenges in navigating the complex copyright laws including inadequate resources, conflicting rules, and uncertainty about the benefit of OC.

"Aspiring" are museums following a conditional openness approach featuring a market service orientation and copyright monopoly. In the effort to balance their traditional and contemporary roles, they seek transformation starting with small steps involving limited investments for marketing collections and engaging in revenue-producing activities. At the same time, they endorse the use of OC licences and advocate for legislative changes.

"Awaiting" are museums following a conditional closure approach that insists on a preservation-led managerial orientation despite a copyright balance occurrence. Due to the lack of managerial capacities and technological skills, they choose conservation and disregard the legal openings provided by copyright flexibilities, not taking advantage of OC opportunities.

Table 1: OC management categories

Categories	Themes	Codes
Pioneers	(a) Have good managerial capabilities	Strong relationship with stakeholders, collaboration with communities, capture benefits for sharing, transparency, risk assessment, low risk, breaking down the process into little steps, good knowledge about the collection status.
	(b) Have good technological skills	Digital skills, rights management information system, data management plan.
	(c) Have good legal awareness	Copyright opportunities, non-exclusive licences, rules for access, knowledge about what can be opened or not, ability to identify and release content, public domain, free licences, creative commons licensing, copyright exceptions, fair use.
	(d) Take full advantage of OC opportunities	Connect with the open movement, adapting open policy.
Custodians	(a) Focus on preservation	Traditional role, preserving cultural heritage, lack of time and capacity.
	(b) Consider themselves as gatekeepers	Gatekeepers, old-fashioned institutions as a safeguard, fear of losing control over collections, extra barriers.
	(c) Fear of copyright	Copyright laws, traditional licensing sanctions.
	(d) Are unsure/unaware of OC opportunities	Contradicting rules, lack of clear international instruments, non-conductive rules, lack of resources, unsure about benefits, open access disregarded.
Aspiring	(a) Seek transformation	Trying to balance traditional and modern roles, wish to market collections, seek revenue-producing activity.
	(b) Start with small steps	Start with a few items, small procedures, low investments.
	(c) Acknowledge legal inadequacy	Advocates for changes in legislation.
	(d) Are interested in OC opportunities	Wish to use open licences.
Awaiting	(a) Choose conservation	Ignore digital transformation, fears.
	(b) Lack managerial and technological skills	Lack of skills, lack of digitally competent employees, lack of defined goals.
	(c) Disregard legal openings	Lack of legal knowledge, definition of public domain, need for lawyers.
	(d) Refrain from OC opportunities	Grey areas, illegal areas, conditional public funding.

Research limitations. *The narrow scope of the preliminary SLR (WoS and Scopus English literature) can be one of the reflected limitations of the study. Similarly, the focus group involving 8 participants limits the findings to a small population. Overall, the focus on museums limits the findings to a specific cultural heritage institution. Similarly, the study focuses on copyright, and it does not extend to other legal dimensions that can potentially affect open culture management. Additionally, only a qualitative evaluation supports museum positioning in the matrix. Given these limitations, authors aim at (a) running further focus groups to refine the matrix of museums' OC management models; (b) administering a survey with museums' managers to transform the matrix into a managerial dashboard guiding the progress to full openness; and (c) developing indicators to position museums in the matrix and monitor the effects of their decision-making/practices.*

Managerial implications. *The matrix of museums' open culture management has theoretical and managerial value. It combines managerial and legal knowledge in OC management in relation to copyright enhancing scholars' interest and understanding of the open culture dilemma as an emerging research area in cultural heritage management that has growing relevance in the digital era. Despite being exploratory, the matrix serves as a benchmark for practitioners to evaluate their stance within the open culture environment, enabling informed decision-making. Both management approaches and copyright laws play a pivotal role in OC management, indicating that museums' OC strategies for museums must consider several aspects to be feasible and require different capabilities and skills. Museums armed with improved legal comprehension and management capabilities can pioneer towards complete openness. Furthermore, our proposed matrix facilitates a clearer understanding of museum managers' current position within the open culture management matrix, thereby aiding in self-identification and performance enhancement within this environment.*

Originality of the paper. *This paper sheds light on the open culture dilemma in museums' cultural heritage management, an emerging and relevant field of research that is still evolving but poorly investigated. Taking an interdisciplinary perspective intersecting management and copyright law, we endeavoured to bridge a gap in the literature on highly topical research that draws together complex social, institutional, and technological elements. The novel matrix of OC management approaches in relation to copyright represents a comprehensive theoretical model advancing knowledge about museums' cultural heritage management in the digital era, laying the groundwork for future research in museum settings. From a practical perspective, our proposed matrix could help managers evaluate their position regarding openness and assess the effectiveness of strategies. Bridging theory and practice in OC management in museums can ultimately guide museums on their way to OC.*

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Destination ambassador, authenticity and informal communication. Exploratory research on mountain professionals

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Abstract

The paper discusses the topic of the destination ambassador in relation to local stakeholders who are not participating in a destination ambassador program (DAP). The information given to tourists by such figures, as part of a process of informal communication, is based on the authentic personal experience of the local stakeholder: information and any advice given are communicated spontaneously by the local stakeholder who has no contractual relations or hierarchical ties with any particular tourism organisation. The paper presents the initial results of ongoing research aimed at investigating the role of mountain professionals as destination ambassadors, shedding light on a new paradigm of host-guest communication. In Alpine destinations ski instructors and mountain guides are recognised as trustworthy stakeholders with regard to the exercise of their profession. Our research examines whether or not these local stakeholders possess the characteristics associated with a destination ambassador and aims to answer three research questions: RQ1 - Do mountain professionals only teach their clients about the theory and practice of their sport/activity or do they also share their knowledge about the destination? RQ2 - Do mountain professionals feel to be part of the destination offer? RQ3 - Do mountain professionals consider important to acquire skills connected to knowledge of the places in which they operate? The area chosen for our field research is Trentino (Italy). 945 local ski instructors and mountain guides filled out and submitted valid questionnaires. Descriptive statistical analyses and ANOVA to test the equality of means by professions have been carried out. This is, to the best of our knowledge, one of the first studies to investigate the topic of the destination ambassador outside the framework of a DAP.

Key words: destination ambassador; authenticity; communication, alpine guide, ski instructor

Framing of the research. *There are numerous studies on authenticity as an element of a destination's tourist offer in the tourism management literature (Wang, 1999; Rickly, 2022) due to the notable implications that it has as a pull factor for tourist demand and hence for territorial competitiveness (Ferrari, 2005; Rickly and McCabe, 2017; Atzeni and Del Chiappa, 2022). Authenticity can be valorised through local stakeholder and community involvement in the design and promotion of the offer in order to a) foster relationships between locals and tourists which contribute to enabling the former to experience an immersive holiday (Deng, 2010; Forlani and Pencarelli, 2018), b) give tourists an opportunity to learn first-hand about the territory in which they are traveling (Wang et al., 2020), c) transmit an authentic image of the destination (Braun et al., 2013; Kavaratzis, 2004).*

If a territory can involve stakeholders and the community in its tourism offer, it increases its capacity to convey the values of the destination and thereby help to build both an authentic image of the territory, on the one hand, (Zhou et al., 2015), and, on the other, relationships with tourists which are likely to strengthen their sense of connection with the destination (Ap. 1992; Palmer et al., 2013). Stakeholders and the community become strategic players in the valorising and communication of the territory's authenticity. And, since they are directly in contact with tourists, they are perfectly positioned to act as destination ambassadors. "An ambassador is seen by coordinators as constituting a credible testimony of the distinctive character of the place and its attractiveness, and can through the word-of-mouth effect influence others through their networks and relationships." (Andersson and Ekman, 2009, p. 43). "For an event or destination, ambassadorship can be an example of a collaborative approach to exchange knowledge between stakeholders with a shared purpose (Bornhorst et al., 2010) and often includes training, campaigns, and programs." (Chancellor et al., 2021, p. 3). "Destination ambassadors directly contribute to a destination's identity by providing a consistent message of key identity elements. However, while brand ambassadors are typically endorsed celebrities, destination ambassadors are unendorsed local residents." (ibidem).

The topic of the destination ambassador remains relatively unexplored within tourism management studies. The study by Chancellor et al. (2021), among the most recent on the subject, gives a definition of this particular figure and provides

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some examples of destination ambassador programs (DAPs). Destination ambassadors are defined as “local stakeholders trained to provide consistent destination-specific information to tourists through friendly and positive interactions, to 1) enhance the visitor experience, and encourage 2) a positive brand image, 3) word-of-mouth advertising, whether face-to-face or via social media, and 4) increased visitation.” (Chancellor et al. 2021, p. 4). The feedback from some of the “destination ambassador programs” (DAPs) being offered to local stakeholders is interesting. Examples include the Aarhus resident ambassador program in Denmark (Trapp, 2020) and the DAPs in the USA studied by Chancellor et al. (2021). These programs are often designed to involve local residents as volunteers in the organisation of big events (Hopkins et al., 2012; Kim et al., 2010; Holmes et al., 2018).

The contributions cited above demonstrate the importance of the destination ambassador’s interaction and communication with tourists and emphasise the communication’s informality (whether online or off), but they deal almost exclusively with the figure of the ambassador within a DAP supported by a particular territorial entity (eg, local convention and visitors’ bureaux; hospitality associations; tourism offices) (see Chancellor et al., 2021).

Little research has been done to date on local stakeholders functioning as destination ambassadors outside a DAP but who - because of their professional activity - have the opportunity to interact with tourists and thus pass on their personal knowledge of the territory. A search in Scopus using the key word “destination ambassador” in March 2024 brought up only one study, by Ly and Tan (2023), which investigates the role of temple keepers in Macao as key players in religious tourism development. The study suggests that “temple keepers have four roles, which are temple attendant, temple representative, cultural knowledge broker, and destination ambassador” (Ly and Tan, 2023, p. 67).

From a managerial perspective, a focus on local key players who are not involved in a DAP is of particular interest. In such cases, in fact, the information given to the tourist is based on the local stakeholder’s authentic personal experience: information and any advice given are communicated spontaneously by the local stakeholder who does not claim to have any contractual relations or hierarchical ties with any particular tourism entity (such as a DMO). In this situation, the local stakeholder thus plays the role of a destination ambassador and also incorporates aspects of the influencer since they are in a position to guide tourists’ choices and behaviours while maintaining a neutral/independent stance in relation to third parties. On this, Chen and Šegota’s (2015) paper focusing on the role of residents in a tourist destination is interesting: the authors have written a conceptual paper which analyses the relationship between residents and destination brand building behaviours in order to investigate the links between place attachment and residents’ behavioural outcomes. The study highlights the importance of word of mouth: “WOM is more credible because the generator is not seen as having direct profit in selling the recommended product or service (Herr, Kardes and Kim 1991; Murray 1991, Silverman 2001).” (Chen and Šegota, 2015, pp. 148-149).

The role of residents as potential ambassadors is also considered in a study by Griffin and Guttentag (2020). The research, however, looks specifically at the role of locals in relation to the travel decisions of visiting friends and relatives. And so, in this case, too, the role of the local as a stakeholder with a particular profession which contributes to the destination’s tourist offer is not focused upon.

With regard to mountain tourist destinations the scientific literature reveals the significance of local stakeholders such as ski instructors and mountain guides due to their role as companions and mentors to tourists engaged in a range of outdoor sporting activities (Beedie, 2003; Clivaz and Langenbach, 2020). Their roles bring them into direct - indeed often close - contact with tourists, whether introducing them to a new sport, or enabling them to increase their prowess on the slopes, or guiding and mentoring hikers and climbers as they explore unknown places and terrains. To date, however, no study has been done on whether these mountain professionals can be considered destination ambassadors with the capacity to valorise the authenticity of the territory, transmit their knowledge of it and influence tourists’ decision-making. The ongoing study presented in this paper is situated within this research frame and describes the initial results of an investigation involving more than 900 local stakeholders.

Purpose of the paper. To analyse the activities and perceptions of so-called mountain professionals (ski instructors, mountain guides, local guides/mountain leader) in order to investigate whether or not these local stakeholders possess the characteristics associated with a destination ambassador although they are not part of a specific DAP.

The research aims to answer three questions:

RQ1: Do mountain professionals only teach their clients about the theory and practice of their sport/activity or do they also share their knowledge about the destination?

RQ2 - Do mountain professionals feel to be part of the destination offer?

RQ3 - Do mountain professionals consider important to acquire skills connected to knowledge of the places in which they operate?

The evidence that emerged from the research allowed us to analyse whether or not the trust that tourists invest in mountain professionals when they are operating in their own particular field of expertise leads tourists to also trust the information that such local stakeholders give about the territory and any advice that they may provide relating to someone’s stay in the area.

Methodology. The area chosen for our case study field research is Trentino (Italy), where ski and mountaineering schools were first opened more than a century ago. In 1872, in Madonna di Campiglio, the Società Alpina del Trentino, now the Società degli Alpinisti Tridentini, popularly known as the SAT (www.sat.tn.it) was founded. The first ski school opened in 1916 on Monte Bondone, just outside the city of Trento (www.skimontebondone.it). (For an account of the history of the development of mountaineering in the Dolomites, see the website of the Guide Alpine Italiane - Collegio nazionale (www.guidealpine.it/), and Torchio and Decarli, 2014).

Our research objects are ski instructors (including downhill and cross-country skiing, and snowboarding) and/or mountain guides (mountain guides, local guides, trainee mountain guides). Within the province of Trento, at the time of our research (2022), 2,675 people were enrolled on the professional register of ski instructors and 453 on the mountain guide register.

Between May 9th and July 26th 2022, questionnaires were sent out to the ski instructors and mountain guides listed on the professional register: 31.3% of the ski instructors and 23.8% of the mountain guides operating in the province responded to the questionnaire. Of the 978 professionals who provided feedback, 33 questionnaires were incomplete or did not allow us to clearly identify the main focus of their profession. We retained 945 valid questionnaires: 837 from ski instructors and 108 from mountain guides (henceforth, we will simply use the terms “ski instructor” and “mountain guide”).

All (945) of the respondents live in Trentino, most are male (74.4%), and they span all age groups, the biggest cohort is that of 50-59 year olds (24.1%).

The questionnaire, administered online, included yes/no questions and questions that used a qualitative rating scale. The topics investigated were:

- a) Ski instructors'/mountain guides' clients' range of interests: analysis of the instructors'/guides' perceptions of the interest their clients show: whether exclusively in their chosen sport/activity, or also in the area's landscape and natural features (flora and fauna, environment/ecology, geology, etc), and/or its history and culture.*
- b) An assessment of relations between the territory's stakeholders: analysis of a) the opinions expressed by the instructors/guides with regard to collaboration between actors and b) how they see their personal engagement in the destination's overall tourist offer.*
- c) Ski instructors'/mountain guides' participation in joint activities and events related to their profession: analysis of the regularity with which the instructors and guides take part in work-related events (meetings, assemblies, committees, project presentations...).*
- d) Skills required by ski instructors/mountain guides: analysis of the competencies (over and above their specialist training) that ski instructors/mountain guides need in order to improve their professional capacity, i.e., marketing and social media management, relationship-building capacity with clients, time management and activity planning, knowledge of foreign languages, knowledge of the culture, environment and landscape of the territory.*

These topics were subjected to descriptive statistical analyses (frequencies and cross tabulations) and to ANOVA to test the equality of means by profession. The main purpose of this paper is to ascertain if the ski instructors and mountain guides possess the attributes of a destination ambassador. The principal results of the study follow and we describe the multiple lines of the (in progress) analysis which are being adopted in order to examine in detail the role of ski instructors/mountain guides as destination ambassadors.

Results.

- a) Clients' interest in sport/activity, clients' interest in the territory itself - Analysis of the aggregate data shows that in general clients are very interested in aspects other than the simple technicalities of their chosen sport/activity. The majority of respondents report that their clients are interested in the landscape (91.6%), in the area's natural features (flora and fauna, environment/ecology, geology, etc) (76.6%), in curious facts about the places they visit (76.5%) and in the history and culture of the area (62.8%). The interest that clients show in information other than that related simply to their chosen sport/activity resonates with the ski instructors'/mountain guides' perceptions of their own roles. Almost all respondents believe that their clients see them as experts, fully qualified to give advice about the sport/activity in which they specialise, as well as on the equipment required (97.0%); someone trustworthy, who can keep you safe and with whom you are able to do something that you would not dare to do alone (97.4%).
*In addition to these observations, and linked to the professionalism and expertise with which the respondents do their work, ski instructors and mountain guides perceive that their clients see them as locals who can be trusted to give honest advice about the area's products, services and tourist shops/businesses (86.5%), and as a reliable voice on the territory's culture (history and traditions), its natural environment and how it has changed over the years (76.9%). The relationships that form between clients and instructors/guides are seen positively by the latter: they say that they find their work satisfying because they see that their clients value what they do (99.7%) and are enthusiastic about the activities proposed to them (98.3%).**
- b) The opinions expressed by the instructors/guides with regard to their relationship with other local stakeholders can be divided between those who assess it positively (48.5%: 22.4% “very positive”; 26.1% “positive”) and those who feel it could be improved (43.2%). According to 8.5% of respondents, it is irrelevant.*
- c) About 40% of respondents occasionally attend meetings or events of possible relevance to their profession (e.g. meetings, assemblies, project presentations) and about 33% participate regularly. However, 19.5% report not being interested and 8% have never been involved in any such activity.*
- d) Almost all respondents say that in order to develop professionally they need to gain further competences in marketing, promotion and social media management (74.3%), and to improve their foreign language(s) (77.0%). About half of the respondents (54.1%) consider it would be beneficial to increase their relationship-building capacity and their time management/activity planning skills. 52.9% said that they thought it would be helpful to learn more about the territory's culture, natural environment and landscape.*

A preliminary analysis of the results obtained deploying ANOVA revealed that mountain guides clients are more inclined to show interest in landscape, cultural and environmental aspects than ski instructors. However, there are no statistically significant differences between mountain guides and ski instructors regarding their need for training in landscape, cultural, and environmental aspects related to their territory. Ski instructors declare that they are perceived as experts (i.e. providing suggestions about technical issues of their activity) more frequently than mountain guides do. In contrast, the latter declare to be perceived as witnesses of the area and its heritage more frequently than ski instructors, all these differences being statistically significant.

Research limitations. The research is based on an analysis of the perceptions of ski instructors and mountain guides and does not, therefore, allow for a direct comparison with the opinions of the tourists themselves.

Managerial implications. The destination ambassador is a strategic player in destination communication: if they are perceived by the tourist as trustworthy, the information that they share will be accepted as very probably credible.

The acquisition of management and marketing skills by key players in the destination's tourist offer can contribute to valorising the territory's authentic elements. Direct communication between locals and guests (ski instructors/mountain guides and tourists) unmediated by the hierarchical ties between destination management organisations and mountain guides/ski instructors can be expected to be experienced by the client as an authentic, trustworthy exchange.

The research results could become a starting point for studies in other destinations where ski instructors and mountain guides are key players in the destination's tourist offer. Such analysis would allow for the comparison of results and the identification of possible best practices for the enhancement of key players who can then take on the role of destination ambassador.

Originality of the paper. This is, to the best of our knowledge, one of the first studies to investigate the topic of the destination ambassador outside the framework of a DAP; it examines the role played by key players in the destination's tourist offer, assessing their capacity to act as destination ambassadors.

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Track 15

**Examining the social and environmental relevance
of sustainable digital business models:
Impact on business practices and consumers –
Special Track**

Good Governance for Smart Villages: A Bibliometric Review

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Key words: *smart village ; rural area ; smart development ; good governance; bibliometric analysis*

Framing of the research. *Smart villages refer to rural areas and communities that strive to achieve various development goals by harnessing accessible resources using new information technologies, collaborative networks, and amenities. This approach fosters new opportunities for residents, organizations, and nearby residents (Juan and Mceldowney, 2021; European Commission, 2018).*

While a single definition of smart villages remains elusive, researchers advocate considering specific attributes such as demography, location, human geography, and social and physical resources (Heap and Hirmer, 2020). The ESPON collaborative project highlights the importance of good governance, public participation, and efforts to improve human capital, capacity, and community. Contrary to common perception, digitalization is not a prerequisite for Smart Village status. Still, it is seen as a tool to achieve broader goals, emphasizing that using digital technologies alone does not define Smart Villages (EPRS, 2021).

Rural areas in the EU, which cover 44.6% of the EU territory and are home to 93.1 million people (20.8% of the total EU population), are multifunctional spaces facing different challenges and opportunities. Many international, regional, and national initiatives are dedicated to promoting smart villages. The Smart Villages portal on the ENRD website provides access to case studies and publications on topics such as digital and social innovation in rural services, revitalizing rural services, the European Green Deal, rural digitalization transformation, rural energy communities and rural mobility (EPRS, 2021).

Initiatives such as the IEEE Smart Village initiative aim to improve education in off-grid communities and promote sustainability across the smart village energy value chain (Adesipo et al., 2020). In addition, several smart village initiatives have been launched globally under the Consultative Group on International Agricultural Research (CGIAR), many of which have been supported by international research organizations and have had a tangible impact in areas most vulnerable to climate change (Fujita et al., 2001).

Over time, the EU's smart village efforts have progressed since the 2016 Cork Declaration (Aziza and Susanto, 2020), with the smart village concept now playing a central role in rural development planning processes (Bokun and Nazarko, 2023)

Purpose of the paper. *Previous bibliometric analyses have shed light on various aspects of smart villages. In particular, Bokun and Nazarko (2023) recently outlined the current knowledge on smart villages and introduced the concept of smart governance based on its operational functions. However, their study stopped short of highlighting the essential role of good governance within the smart village discourse. Wang et al. (2022) provided a bibliometric assessment that highlighted a prevailing focus on technology-centric initiatives in smart village research, often at the*

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expense of societal, service-oriented and cultural considerations. Our study aims to examine the role of good governance in the context of smart villages. Based on the UNDP (1997) definition, good governance is understood as “the exercise of political, economic and administrative authority in the management of a country’s affairs at all levels”, enriched by eight main attributes: Participation, the rule of law, transparency, responsiveness, consensus orientation, accountability, equity and inclusiveness (Madhu, 2005).

We argue for a future research trajectory that prioritizes collaboration through these governance principles (EPRS, 2021), thereby enhancing the integration of good governance within smart village studies. To this end, we examine a significant bibliometric corpus to address the following research questions:

- 1) What overarching insights and conclusions emerge from existing smart village research?
- 2) How is the concept of good governance relevant to smart village studies?
- 3) How can this study refine the current intellectual framework of smart village knowledge?

Methodology. For our data collection, we chose Scopus as our primary database, as it is recognized worldwide for its extensive, accurate, and high-quality research content (Elsevier, 2024). This choice was driven by the database’s alignment with our research objectives. To identify relevant literature, we employed a targeted search strategy using specific keywords such as “smart village”, “rural area”, “smart development”, “smart countryside”, “climate-smart village”, “smart global village”, and “smart tourist village” in the title, abstract and keyword fields. Our search strategy included the Boolean operators ‘OR’ and ‘AND’ to broaden the search scope. It used fuzzy search techniques, denoted by asterisks (*), to capture different word forms within the selected keywords.

The search was restricted to articles, reviews, and conference papers published in English to ensure a comprehensive literature review. The final literature search was completed on 20 February 2024.

Our analytical approach consisted of two main components: 1) performance analysis and 2) science mapping. The performance analysis component aimed to evaluate the contributions within the selected literature, focusing on bibliometric assessments characterized by a descriptive analysis approach (Ramos et al., 2004; Donthu et al., 2021). Following the methodology outlined by Combo et al. (2011), the science mapping component sought to elucidate the relationships and intellectual interactions between studies, highlighting the structural connections between the research materials collected.

We manually screened documents in the initial data collection phase, evaluating titles and abstracts to filter out non-relevant papers. This screening process resulted in a dataset of 1456 papers. After removing duplicates and non-related papers with the main topic, the dataset was refined to 329 articles. Our bibliometric analysis was carried out using tools such as Excel, R packages, and VOSviewer, which allowed a comprehensive exploration and visualization of the research landscape in the context of smart villages.

Results.

Performance analysis.

In our study, we specifically use performance analysis to explore the scientific landscape of smart village research. This approach includes techniques such as citation analysis and counting publications by various criteria such as country, institution, research teams, or individual authors. The rationale for using citations and publication counts is to assess the impact and influence of research, with the common understanding that more frequently cited papers are more significant (Thelwall, 2008). Our results show that a global community of 1140 authors has contributed 329 scholarly papers to the field of smart villages. This comprehensive dataset, extracted from the Scopus database without any date or geographical restrictions, includes 55 conference papers, 6 book chapters, and 151 journal articles from 214 sources. There were 47 cases of single authorship and 1039 cases of co-authorship, clearly indicating a predominant trend towards collaborative research in this field. With 2379 citations attributed to these publications, the average citation rate is 7.23 per journal article and 2.0 per author. This citation level reflects the academic community’s commitment to and recognition of Smart Village research and demonstrates the field’s ongoing efforts to advance understanding and foster innovation.

Tab1: Descriptive statistics for Publication and citation of smart villages research.

Metric	Frequency
Publication metrics	
Total publications (TP)	329
Numbers of contributing authors (NCA)	1140
Sole authored publications (SA)	47
Co-authored publications (CA)	1093
Citation metrics	
Total citations (TC)	2379
Average citation (AC) for journals	7.23
Average citation (AC) for authors	2.0

Source: own elaboration (2024)

Figure 1 shows the number of active years of publication (NAY) in the field of smart villages, tracing the publication trend from 2002 to the beginning of 2024. The line graph vividly illustrates a significant increase in publications on smart villages, particularly noticeable from 2015 to early 2024. This period marks a crescendo of scholarly interest and output,

Table 2: Top 6 influential journals in smart village research

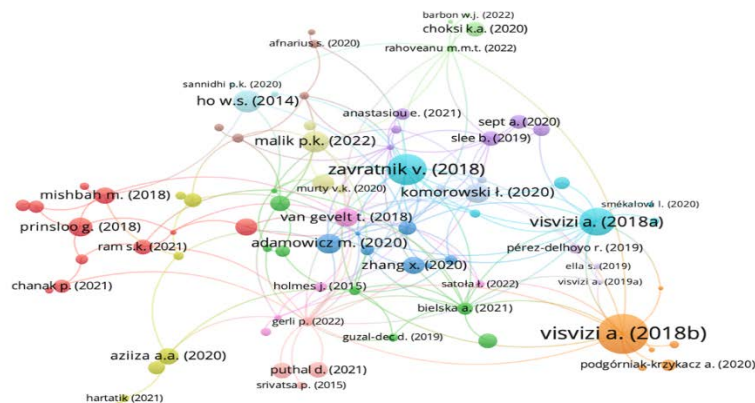
Journal	Publications	Citations	Total link strength	Reference
Sustainability (Switzerland)	19	557	27	Adamowicz et al. (2020); Putri, et al.(2023)
Smart Villages in the EU and Beyond	13	129	11	Szanyi, (2019)
European Countryside	6	112	19	Sept, A. (2020)
IEEE Communications Magazine	4	90	1	Han, et al.(2023)
Land	6	68	10	Ariyaningsih & Shaw, (2023)
Energies	5	45	1	Satola & Milewska, (2022)

Table 2 shows the top 6 prominent publications that contribute significantly to the intellectual structure of the knowledge base on Smart Villages. The journal Sustainability (Switzerland) is the most influential with 19 publications and 557 citations, followed by the journal Smart Villages in the EU and Beyond, with 13 publications and 129 citations. European Countryside with 6 publications and 112 citations. IEEE Communications Magazine with 4 publications and 90 citations. Land Journal with 6 publications and 68 citations, and Energies Journal with 5 publications and 45 citations. European Rural Journal and IEEE Communications Magazine received significant citations but had fewer publications. The total link column shows the intensity of the links seen in Figure 2.

Co-citation analysis.

Co-citation analysis serves as a tool to reveal the intellectual architecture of a research topic, showing how two publications are connected within a co-citation network when both are cited by a third publication (Rossetto et al., 2018). This method allows researchers to identify key publications and thematic clusters, illuminating the core contributions and discussions within a field (Hjørland, 2013). By applying co-citation analysis to our study of smart villages, we have identified key articles that have played a significant role in developing the knowledge base of the field. These articles have provided theoretical and empirical insights, introducing assumptions, conceptual frameworks, and preliminary findings that lay the foundation for further exploration and validation within the smart villages research field.

Figure 3: Co-citations analysis. Each node in a picture represents a publication, and two publications are linked if they co-occur in the reference lists of the papers selected by our review. The node's size shows the citation frequency, with larger nodes representing more citations. The connection between the nodes symbolizes the presence of the related articles together.



Source: own elaboration (2024)

Table 3: Top 7 influential articles in smart village research.

Title	Author	Journal	Citation	Total link strength
Rescaling and refocusing smart cities research: From mega cities to smart villages.	Visvizi et al., 2018.(b)	Journal of Science and Technology Policy Management	246	97.05
Smart villages: Comprehensive review of initiatives and practices.	Zavratnik et al., 2018	Sustainability	228	90.59
It's not a fad: Smart cities and smart villages research in European and global contexts	Visvizi and Lytras 2018 (a)	Sustainability	140	52.55
The "Smart Village" as a way to achieve sustainable development in rural areas of Poland	Adamowicz & Zwolińska (2020).	Sustainability	124	45.00
Achieving universal energy access and rural development through smart villages	van Gevelt et al., (2018)	Energy for Sustainable Development	97	37.65
Integrated biomass and solar town concept for a smart eco-village in Iskandar Malaysia	Ho et al., (2014)	Renewable Energy	84	24.60
How do smart villages become a way to achieve sustainable development in rural areas? Smart village planning and practices in China	Zhang & Zhang 2020.	Sustainability	80	19.79

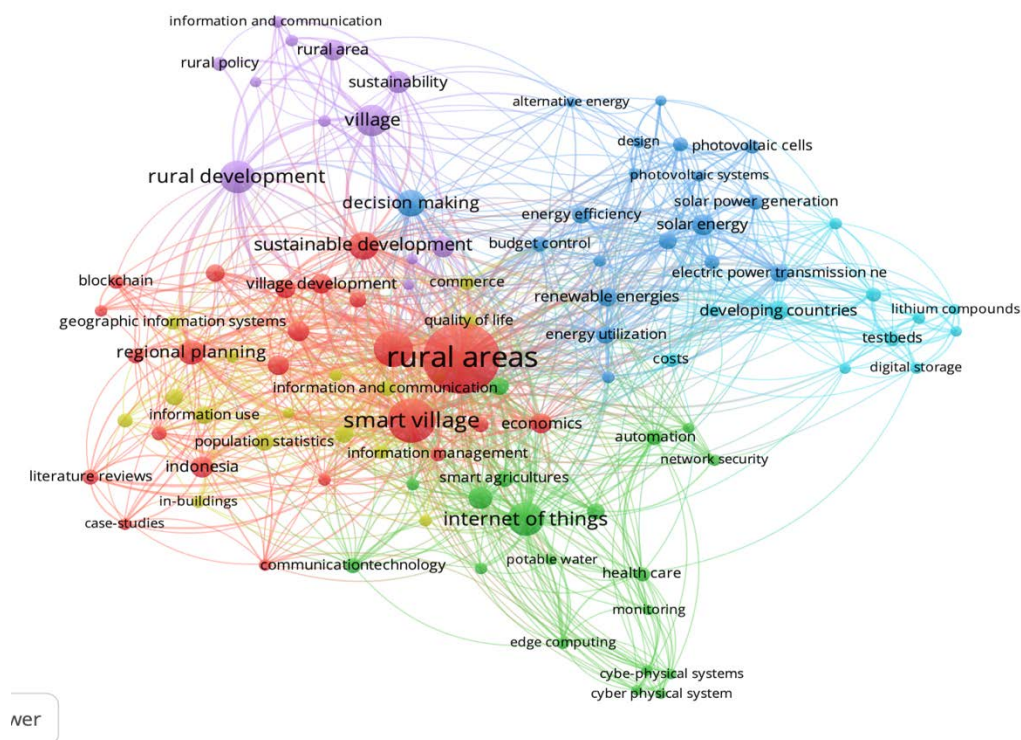
Source: own elaboration (2024)

Co-word analysis

Co-word analysis serves as a central tool for delving into the content of publications, primarily by examining “author keywords.” This method allows researchers to dissect and understand the nuances of each thematic cluster within the literature, providing valuable insights into the core topics under investigation. Furthermore, co-word analysis has the potential to predict future research trajectories by analyzing significant terms from sections discussing implications and future directions within publications.

Using this methodology, we have identified 31 keywords that form the basis for defining thematic clusters within the Smart Villages research domain. Figure 5 provides a visual representation of these clusters, distinguished by the colors red, green, blue, purple, and yellow. Each color delineates a specific thematic cluster, which together provide a nuanced representation of the current intellectual landscape of smart village research. This categorization into five distinct clusters aligns with our aim to encapsulate the multifaceted intellectual structure that characterizes the smart village research field (Angioni, 2016).

Figure 4: Co-word (keyword co-occurrence) involves examining the co-occurrence of keywords. The node’s size reflects the frequency of the keyword. The connection between the nodes symbolizes the correlation between keywords. Each color represents a thematic cluster, where the nodes and linkages within that cluster may elucidate the coverage of subjects related to the theme.



Clustering

Clustering is an important enhancement strategy in bibliometric analysis, which aims to generate thematic clusters and monitor their evolution. This technique facilitates a deeper understanding of the emergence and development of a research field (Zupic & Čater, 2015). To this end, we conducted a detailed content analysis of the top 20 articles using NVivo 12 software. This process allowed us to comprehensively delineate the themes and gain in-depth insights into their interrelationships. In addition, we provide concise summaries for each cluster identified, together with a preview of potential directions for future research.

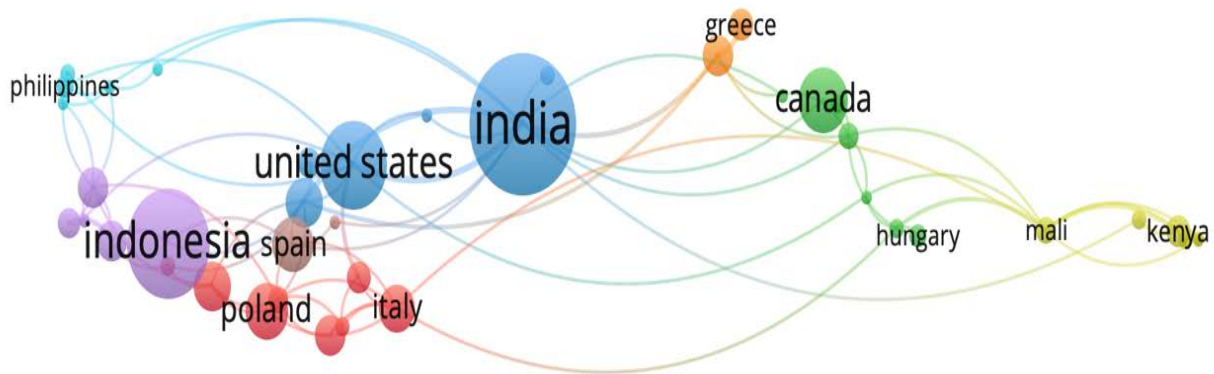
Table 4: Top 7 Influential articles in smart village research.

Cluster	Theme	Articles
Cluster one	Sustainable development	Zhang & Zhang (2020), Wang et al., (2022), Adamowicz et al., (2020)
Cluster two	Agriculture	Visvizi & Lytras, (2018) Adamowicz et al., (2020) Aggarwal et al., (2018)
Cluster three	Policy	Aziiza et al., (2020) Philip & Williams (2019) Naldi et al., (2015)
Cluster four	Energy	Schnitzer et al.,(2014) Prinsloo et al., (2016) Somwanshi et al., (2016)
Cluster five	Information communication technology (ICT)	Stojanova, et al., (2021) Pěluča et al., (2019). Patnaik et al., (2020)

Cluster 1, named ‘sustainable development’, is characterized by the highest number of citations and significant depth of content. It explores the direct link between the Sustainable Development Goals (SDGs) and their critical role in

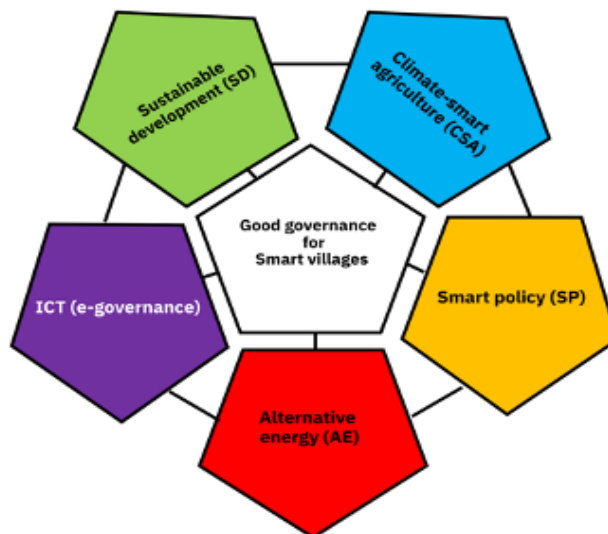
to increase the depth and diversity of research in smart villages, potentially leading to innovative solutions and approaches that address the unique challenges rural communities face worldwide. This analysis not only maps the current landscape of co-authorship within smart village research but also highlights the potential for increased international collaboration to enrich the field further.

Figure 6: Co-authorship involves examining the scholar's collaboration with each other. The node's size reflects the frequency of collaboration. The connection between the nodes symbolizes the correlation between authors and other countries.



Our findings culminate in a conceptual model that highlights the critical link between key themes in smart village research and the concept of good governance. This model serves as a springboard for further exploration in subsequent studies (see Figure 7).

Fig 7: Conceptual Model emerges from findings. Note(s): boxes represent themes. Lines indicate the linkage between themes and the concept of Good governance.



Source: own elaboration (2024)

Research limitations. Our study used performance analysis and science mapping techniques to explore the convergence of good governance and smart village research. However, it's important to acknowledge that our exploration did not encompass the full range of empirical methods available for such investigations. We encourage future research efforts to broaden the scope of our conceptual framework, potentially revealing more nuanced aspects of this relationship. First, we suggest further research into the relationship between sustainable development and good governance in the context of smart villages. Given the complexities of smart village development, a deeper investigation into the implications of good governance principles for achieving sustainable development goals is warranted. Second, the importance of good governance and smallholder institutions has been highlighted by the Paris Climate Agreement (2015). However, existing research has mainly focused on the scientific and technological dimensions of climate-smart agriculture (CSA) practices. We argue that future research should delve deeper into bridging knowledge gaps on socio-political issues in the context of smart villages and examine the effectiveness of good governance in addressing CSA challenges. Third, smart villages encompass various conceptual dimensions such as smart people, smart mobility, smart

environment, smart governance, smart living, and smart economy. Building on these foundations, we suggest that New Public Management (NPM) researchers focus on formulating smart policies to address the phenomenon of ‘smartness’ in smart village research. Finally, although rural governance can provide residents with government services that are appropriate, methodical, and transparent, there is still a lack of research on smart communities. Therefore, we recommend that future studies investigate the role of information and communication technology (ICT) from an e-government perspective in achieving good governance in smart villages. In the area of co-word analysis, our focus was limited to an in-depth examination of 27 selected articles to delineate thematic clusters and their interrelationships within smart village research. Acknowledging this limitation, subsequent research could benefit from expanding the corpus of full-text articles analyzed. Such an expansion would improve the understanding of the smart village knowledge base’s intellectual structure and thematic development, thereby facilitating a more comprehensive mapping of this research field. This approach would deepen insights into existing thematic patterns and identify emerging trends and gaps in the literature, thus guiding future scholarly endeavors in this area.

Managerial implications. Our research highlights the contributions of prominent authors, institutions, and regions, as well as the importance of strategic partnerships and efficient resource allocation in advancing smart village efforts. The delineation of five primary research themes within the smart village domain provides a clear roadmap for prioritizing research efforts, allocating funding, and forming multidisciplinary teams. In addition, our examination of collaborative networks highlights the potential for cultivating international partnerships, thereby fostering global collaboration and advocating for a more holistic approach to smart village development. This finding is particularly relevant for policymakers seeking to strengthen cross-border relationships and academics seeking to increase their research impact through international collaborations. Identifying the most influential publications in our study serves to help managers and academics select effective channels for disseminating information and keeping abreast of emerging trends in smart village research. This understanding is crucial for adapting to the evolving landscape and ensuring a flexible allocation of resources. For policymakers, the insights gained from this bibliometric analysis can inform the development of policies supporting smart village efforts’ sustainability and effectiveness. Incorporating these findings into policy formulation can lead to more informed decision-making processes that support the success of smart village initiatives. In summary, our bibliometric analysis lays the groundwork for fostering collaboration, guiding funding decisions, and promoting multidisciplinary engagement among managers, policymakers, and academics. This collaborative effort is essential for smart village projects’ sustainable growth and viability worldwide.

Originality of the paper. This study contributes to the understanding of the interplay between good governance and smart village initiatives through an innovative combination of bibliometric and content analysis. It highlights the central role of good governance in the prosperity of smart villages, delineates the scholarly terrain, and identifies areas for future research. By delineating specific areas for further scholarly investigation, this study facilitates a more in-depth examination of efficient governance frameworks within smart village development, providing a new perspective for both scholars and policymakers.

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The Paradox of Sustainability in Crowdfunding: Lessons from the Food Industry

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Abstract

This study delves into the complex interplay between crowdfunding success and sustainability orientations within the food sector, utilizing a dataset from Kickstarter campaigns between 2013 and 2020. At the intersection of digital business, sustainability, and the food industry, this research explores how environmental and social impact narratives influence the likelihood of crowdfunding achievements. Through content analysis, the study quantitatively assesses the presence of Environmental Impact Orientation (EIO) and Social Impact Orientation (SIO) in campaign narratives, culminating in the creation of a Sustainable Impact Score (SIS) to measure the overall commitment to sustainability. Logistic regression analysis reveals a paradoxical finding: campaigns with a higher emphasis on sustainability tend to experience lower success rates. Despite the growing consumer demand for sustainable practices, this inverse relationship highlights a nuanced challenge in communicating sustainability within crowdfunding contexts. The study contributes to the academic debate by providing methodological innovation through the SIS and offering practical insights for campaigners and platforms seeking to navigate the complexities of sustainability in crowdfunding. By bridging the gap between theoretical understanding and practical application, this research illuminates the pathways for leveraging digital platforms in support of sustainable initiatives within the food sector, encouraging further exploration into the determinants of crowdfunding success.

Keywords: Crowdfunding, Sustainable Digital Business Model, Environmental Impact Orientation, Social Impact Orientation, Food Sector.

Framing of the research. *The framing of this research is positioned at the confluence of three critical and contemporary streams: the evolving landscape of crowdfunding as a pivotal mechanism for raising capital, the increasing integration of sustainability into business models, and the unique context of the food sector, which stands at the intersection of environmental, social, and economic concerns. This multidimensional approach reflects an understanding that the dynamics of crowdfunding success cannot be fully appreciated without considering the broader societal shifts towards sustainability and the specific challenges and opportunities inherent in the food industry (Cillo et al., 2019; Li et al., 2020; Pronti and Pagliarino, 2019).*

At its core, the research seeks to decode the nuanced ways in which environmental and social impact orientations influence the success of crowdfunding campaigns within the food sector. This sector is uniquely impacted by and contributes to sustainability issues, from resource consumption and waste production to health and social equity. As such, it provides a fertile ground for investigating how the growing consumer demand for sustainability is mirrored in the crowdfunding domain, where backers invest in ideas and projects that align with their values and concerns.

Crowdfunding, traditionally viewed through the lens of financial metrics and project characteristics, is re-examined in this study through a sustainability lens, considering how environmental and social narratives embedded within campaign descriptions might affect their appeal and, consequently, their funding outcomes (Moss et al., 2018). This approach acknowledges the role of digital platforms in not only facilitating the exchange of capital but also in reflecting and shaping societal values, particularly regarding sustainability (Bhattacharya et al., 2008, Carroll, 1991).

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Moreover, the research is framed to contribute to the discourse on digital business models, particularly how these models can be leveraged to support and promote sustainable development within the food sector. It aims to bridge the gap between theoretical insights on sustainability and practical outcomes in the crowdfunding sphere, offering a comprehensive analysis that extends beyond the traditional focus on project or backer characteristics.

Purpose of the paper. The paper sets out on an exploratory journey to disentangle the complex dynamics underpinning crowdfunding success within the food sector, particularly through the lens of environmental and social impact orientations. At the heart of this investigation lies the premise that the explicit commitment to sustainability—encompassing both environmental and social dimensions—plays a critical role in influencing the perceptions of backers and, by extension, the success of crowdfunding campaigns on platforms such as Kickstarter. This exploration is timely and significant, given the escalating emphasis on sustainability in business practices and consumer behavior, alongside the rapid digital transformation of business and fundraising mechanisms.

Through rigorous content analysis, this study aims to quantitatively measure the extent to which sustainability concerns are articulated in the narratives of food-related crowdfunding campaigns. This methodological approach is designed to objectively assess how environmental and social impacts are communicated to potential backers, thereby laying a foundation for a deeper understanding of the narrative strategies employed by campaigners.

A focal point of the paper is the investigation of the correlation between these sustainability orientations and the achievement of crowdfunding goals. It analyzes whether an emphasis on environmental and social impact, as communicated through campaign narratives, bears a significant relationship with the ability of these initiatives to meet or exceed their funding targets. This study is vital for discerning the nuanced ways in which sustainability messaging influences crowdfunding outcomes.

Moreover, the paper introduces an innovative methodological contribution through the development of the SIS, a composite measure that synthesizes environmental and social impact orientations into a singular metric. This approach allows for a comprehensive evaluation of a campaign's sustainability commitment and its potential impact on crowdfunding success, offering a novel lens through which to examine these dynamics.

Beyond its theoretical ambitions, the paper also seeks to furnish practical insights for campaigners and crowdfunding platforms. By elucidating the complex interplay between sustainability communication and crowdfunding success, the study provides strategic guidance for crafting compelling campaign narratives and suggests avenues through which platforms can better accommodate and promote sustainability-focused projects.

Lastly, the study aspires to act as a catalyst for further research in this growing field, encouraging scholars to delve deeper into the intersections of sustainability, digital crowdfunding, and consumer behavior. It highlights the need for a broadened inquiry into the determinants of crowdfunding success and invites an exploration of these phenomena across various sectors and crowdfunding models.

Methodology. The methodology section delineates the structured approach employed to dissect the relationship between crowdfunding success and environmental and social impact orientations within the food sector, utilizing a dataset collected from Kickstarter campaigns between 2013 and 2020. Kickstarter, a leading reward-based crowdfunding platform recognized for its comprehensive project visibility and “all-or-nothing” funding model, served as the exclusive data source, aligning with the precedent set by seminal studies in the crowdfunding domain (Hu et al., 2015; Kim et al., 2016; Mollick, 2014; Zhou et al., 2018). The choice of Kickstarter was motivated by its significant footprint in the crowdfunding landscape and the opportunity to benchmark this study's findings against an extensive body of existing research.

Focusing specifically on the food category, the study acknowledges the sector's pivotal role in environmental sustainability and public health, as well as its cultural and social significance. This focus is driven by the sector's substantial impact on land use, biodiversity, water resources, and its direct linkage to consumer health trends and cultural practices. The manual compilation and verification of data culminated in a refined dataset comprising 397 projects, carefully screened for language consistency and completeness.

Crowdfunding success is operationalized as a binary outcome, reflecting whether a project meets or exceeds its funding target, in line with established methodologies (Hildebrand et al., 2017; Moritz and Block, 2016; Shneor and Vik, 2020). This study employs content analysis to quantitatively assess the presence and intensity of SIO and EIO within project narratives, building upon the linguistic categorization introduced by Moss and colleagues (2018). Each campaign's narrative was systematically analyzed to quantify the prevalence of categorized terms reflective of SIO and EIO, resulting in a scoring system that captures the emphasis on these orientations.

Further, the introduction of the SIS represents a methodological innovation, synthesizing the EIO and SIO scores into a composite measure of a project's sustainability orientation. This balanced metric facilitates a comprehensive evaluation of a campaign's commitment to sustainability.

To ensure the robustness of the content analysis, a rigorous validation process involving inter-rater reliability checks via Cohen's Kappa statistics was implemented, confirming the objectivity and consistency of the evaluative approach (Fleiss et al., 2003). The econometric analysis incorporated a range of control variables, including the number of backers,

project goal, campaign duration, and visual elements of the project presentation, among others, to provide a holistic view of the factors influencing crowdfunding success.

Employing logistic regression, the study examines the impact of EIO, SIO, and SIS on CS, alongside these control variables, to elucidate the dynamics at play in determining crowdfunding outcomes in the food sector. This methodological choice is grounded in the binary nature of crowdfunding success and is supported by a body of literature that underscores the efficacy of logistic regression in exploring the determinants of crowdfunding achievements (Deng et al., 2022; Zhou et al., 2018).

Results. The results of the logistic regression analysis offer a nuanced understanding of the determinants influencing crowdfunding success within the food sector, specifically examining the roles of EIO, SIO, and a combined SIS.

In Model 1, which focused on the effect of EIO on crowdfunding success, a significant negative relationship was uncovered. The regression coefficient ($b = -.393$, $p < .05$; $SE = .169$) indicates that campaigns with a higher emphasis on environmental impacts tend to experience lower rates of crowdfunding success. This finding challenges the intuitive assumption that environmental promise would naturally attract more backers, suggesting that the appeal of environmental initiatives may be more complex.

Model 2 examined the influence of SIO on crowdfunding success, revealing a similar negative relationship ($b = -.416$, $p < .05$; $SE = .166$). This suggests that projects prioritizing social impact also face difficulties in achieving crowdfunding success. The consistency of this negative relationship across environmental and social dimensions highlights a broader challenge for projects emphasizing sustainability impacts in their campaigns.

In Model 3, the analysis extended to the composite SIS, which integrates both environmental and social orientations. The findings ($b = -.726$, $p < .01$; $SE = .231$) significantly reinforced the notion that a higher composite sustainability orientation correlates with diminished crowdfunding success, emphasizing the paradoxical nature of sustainability communication in crowdfunding contexts.

Across all models, the number of backers emerged as a consistently positive predictor of crowdfunding success ($b = .033$, $p < .001$; $SE = .006$), underscoring the critical role of broad-based support in crowdfunding achievements. Conversely, the logarithm of the project goal exhibited a significant negative impact across the board (b values ranging from -1.320 to -1.351 ; $p < .001$), indicating that higher funding targets are associated with lower success rates.

The readability score of project descriptions negatively influenced success in all models (b values from $-.037$ to $-.039$; $p < .05$), suggesting that more complex narratives might deter potential backers. Conversely, the number of updates and comments positively correlated with crowdfunding success (number of updates: b values ranging from $.151$ to $.166$; $p < .01$ and number of comments: b values from $.146$ to $.150$; $p < .01$), highlighting the importance of active engagement and community building in successful crowdfunding campaigns.

Other control variables, including the project duration, staff pick status, the proportion of US-based projects, the number of videos, and the number of images, did not demonstrate significant effects on crowdfunding success in any of the models.

Research limitations. The exploratory nature of this study into the relationship between environmental and social impact orientations and crowdfunding success in the food sector inherently comes with limitations that present opportunities for future research. A notable limitation is the exclusive analysis of campaigns from a single crowdfunding platform, which, despite its prominence and frequent citation in academic literature, may not fully encapsulate the diverse dynamics of crowdfunding activities across different contexts. The inclusion of multiple platforms in future studies, especially those catering specifically to the food sector or projects with a sustainability focus, could provide a more comprehensive understanding of crowdfunding behavior and success factors.

Moreover, the scope of determinants investigated in this research is primarily centered around social and environmental impact orientations. This focused approach leaves room for further exploration into additional factors that could significantly influence crowdfunding success. Investigating elements such as the language style or the tone of communication within campaign narratives could uncover deeper insights into effective crowdfunding strategies. These aspects may play a crucial role in engaging potential backers and influencing their decision-making processes.

Another specific area for future investigation arises from the methodology employed to assess the sustainability impact orientation of crowdfunding campaigns, where social and environmental impacts were assigned equal importance. This equal weighting approach might not align with the nuanced preferences or values of backers, who may prioritize one dimension over the other. Future studies could aim to refine the sustainability impact orientation indicator by exploring alternative weighting schemes that more accurately mirror the backers' perspectives. Empirical testing to identify the optimal balance between social and environmental components could enhance the indicator's utility, leading to more precise evaluations of campaign sustainability efforts.

Additionally, understanding how different target audiences perceive and value environmental versus social impact orientations could yield valuable insights. Tailoring campaign strategies to align more closely with the specific interests and motivations of various backer segments may improve campaign appeal and, ultimately, success rates.

Managerial implications. *This research extends beyond theoretical insights, providing practical implications for both campaigners in the crowdfunding domain and crowdfunding platforms themselves. For campaigners, the essence of strategic communication cannot be overstated. The findings elucidate the delicate balance required in showcasing environmental and social impacts within campaign narratives. While these orientations are intrinsically valuable, their overemphasis could inadvertently impede crowdfunding success. Campaigners are thus encouraged to weave these messages into a broader narrative that encompasses the project's core value proposition, ensuring the sustainability message complements rather than dominates.*

Understanding the diverse motivations of potential backers emerges as another crucial strategy. This study highlights the importance of distinguishing between backers drawn primarily to the project's utility and those motivated by its environmental or social implications. By tailoring marketing efforts to address these distinct interests, campaigners can enhance their appeal across a broader spectrum of potential supporters. This tailored approach not only speaks to the varied motivations of the crowdfunding audience but also optimizes engagement and support.

For crowdfunding platforms, the study suggests a shift towards features that enable a more nuanced evaluation of campaigns, particularly in terms of their sustainability impact. The introduction of tools or metrics akin to the sustainability impact orientation indicator can offer backers a deeper understanding of a project's environmental and social commitments. Platforms stand to benefit from incorporating such features, enhancing their ability to attract a diverse range of investors and enriching the crowdfunding ecosystem with a stronger focus on sustainability.

Moreover, platforms are advised to consider the implementation of enhanced categorization methods and visibility features for sustainability-focused projects. Such initiatives could improve the matchmaking process between projects and interested backers, thereby elevating the profile of campaigns with significant environmental and social impacts. Additionally, the adoption of visual indicators or scoring systems to reflect a project's sustainability orientation could further streamline the decision-making process for backers, offering quick and clear insights into the sustainable nature of projects.

Originality of the paper. *This paper's originality lies in its multifaceted theoretical contributions to both the academic and practical understanding of crowdfunding in the context of sustainable digital business models, specifically within the food sector. Firstly, it advances the academic debate on the determinants of crowdfunding campaign success by dissecting campaign texts into specific orientations - environmental and social. This approach builds upon and extends the concept of social linguistic positioning as outlined by Moss and colleagues (2018). By differentiating between environmental and social narratives, this research enriches the literature on crowdfunding communication strategies, offering a nuanced view of how these orientations influence potential backers.*

Secondly, this study addresses a significant gap in literature by focusing on crowdfunding within the food sector, a domain that, despite its importance, has received limited attention from scholars. The findings reveal a paradox where a strong emphasis on social and environmental issues may reduce a project's chances of crowdfunding success. This insight is critical as it challenges the prevailing assumption that such commitments universally enhance backer appeal, adding depth to our understanding of the dynamics at play in food sector crowdfunding.

Lastly, the development of a sustainability impact orientation indicator, the SIS, marks a significant methodological leap forward. This tool allows for a more effective assessment and communication of a campaign's sustainability efforts, potentially overcoming the perceptual barriers faced by projects that span multiple categories. Inspired by the challenges highlighted by Leahey and colleagues (2017) regarding audience perception, the SIS provides a concrete metric for evaluating and highlighting sustainability in crowdfunding campaigns. This advancement is not merely methodological but has profound implications for improving the communication strategies of crowdfunding campaigns, thus enhancing their success potential.

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Paradoxical Tensions and Paradoxical Mindset as Predictors of Managers' Behavioral Responses to AI-driven Healthcare Tools: A Preliminary Study

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Abstract

Artificial Intelligence (AI) may reshape healthcare by introducing new treatments and applications. As implementation of AI in medicine increases, understanding the responses of medical professionals to these technologies becomes crucial. To improve AI's potential for the medical field. This study explores the impact of paradoxical tensions and the paradoxical mindset on medical staff reactions to AI uses. By leveraging on a quantitative research design with an experimental study involving 357 participants, the results show that the paradoxical mindset moderates the effects of paradoxical tension on performance, learning, and belonging influencing users' positive intention to use and satisfaction.

Importantly, investigating the interplay between paradoxical tensions and a paradoxical mindset as determinants of managers' inclination to adopt artificial intelligence tools contributes to understanding the dynamics of organizational decision-making, fostering sustainability in the evolving digital landscape.

Key words: *artificial intelligence; paradoxical tensions; paradoxical mindset; intention to use; users' satisfaction; healthcare*

Framing of the research. *The examination of healthcare managers' intention to adopt artificial intelligence (AI)-based tools require a sophisticated understanding of the paradoxical tensions inherent in decision-making processes, especially its relevance for data-driven decision-making processes (Irgang et al., 2023; Sestino et al., 2023).*

Paradoxical tensions, characterized by the simultaneous existence of conflicting demands or goals, play a pivotal role in shaping organizational behavior and decision-making (e.g., as in Miron-Spektor et al., 2018; Smith & Lewis, 2011). In the context of AI adoption in healthcare management, managers often deal with the tension between embracing technological advancements for improved patient outcomes and the apprehension surrounding the potential disruption and ethical implications of AI implementation. A paradoxical mindset becomes crucial in navigating these tensions, as it involves the ability to simultaneously hold and manage contradictory beliefs and attitudes (Boemelburg et al., 2023; Miron-Spektor et al., 2018): This mindset allows healthcare managers to recognize the dual nature of challenges and opportunities that AI presents in the healthcare sector. Consequently, investigating the role of paradoxical tensions and the cultivation of a paradoxical mindset is imperative for gaining insights into healthcare managers' intentions to embrace AI-based tools and enhancing the strategic decision-making processes within healthcare organizations.

The existing body of literature focuses on the adoption of data-driven technologies, specifically AI, in healthcare, employing a narrow technology-centric approach (Nilsen et al., 2022). This research often operates under the assumption that AI adoption occurs when individuals perceive algorithms as useful, reliable, and capable of producing fair and explainable outcomes (Choung et al., 2022; Shim, 2021; Wang et al., 2021), also accordingly a sustainable paradigm (Wilson et al., 2022). Previous studies have explored the attitudes and behavior of healthcare practitioners towards AI, addressing concerns such as performance anxiety, privacy issues, social influence, hedonic motivations, and anthropomorphism (e.g., as in Cabrera-Sánchez et al., 2021; Esmaeilzadeh, 2020; Lu et al., 2019). However, the inherent tensions arising in AI-related decision-making processes have yet to be thoroughly investigated, necessitating further research to unravel this complex phenomenon, especially as for a sustainable perspective (Aloisi et al., 2023)

The Paradox theory, within the context of technology adoption literature, provides a valuable theoretical framework for understanding three distinct types of tensions in AI clinical decision-making (Miron-Spektor et al., 2018; Schad et al., 2016) in terms of performing tensions, learning tensions, and belonging tensions. Performing tensions involve

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conflicts between the contradictory needs, interests, demands, outcomes, and requirements; To clarify, in clinical decision-making, healthcare practitioners grapple with conflicting interests from patients, their families, the healthcare system, and the hospital itself. The introduction of AI systems is believed to enhance performance, but it also raises expectations, leading to performing tensions. Similarly, learning tensions manifest over time as healthcare practitioners navigate between traditional practices and algorithmic recommendations that may contradict conventional conclusions regarding treatments and diagnoses (Hsiao et al., 2013). Balancing adherence to traditional methods against embracing unconventional algorithmic recommendations gives rise to learning tensions. Moreover, belonging tensions, also known as tensions of identity, stem from the complexity and plurality of individuals and groups seeking both homogeneity and distinction (Smith & Lewis, 2011). The integration of AI-based decision support systems may offer healthcare practitioners a sense of belonging by leveraging advanced technology for patient care. However, simultaneous concerns about AI replacing human tasks and decisions generate belonging tensions.

In the realm of healthcare, the consideration of paradoxical tensions and mindset proves to be pivotal in the construction of long-lasting “sustainable” digital business model, in its broader sense (Endregat & Pennik, 2021; van Bommel, 2018): Firstly, paradoxical tensions, arising from conflicting demands such as cost efficiency versus quality care, or innovation versus regulatory compliance, require adept navigation for effective decision-making. Embracing a mindset that acknowledges and strategically addresses these tensions fosters resilience and adaptability within the digital healthcare business model.

Moreover, a dynamic mindset facilitates the identification of synergies between seemingly contradictory elements, leading to innovative solutions that can enhance sustainability. In an academic context, recognizing and managing paradoxical tensions underscores the need for a nuanced understanding of the complex interplay between diverse factors in the healthcare ecosystem, ensuring the development of digital business models that are not only technologically advanced but also socially, economically, and ethically sustainable.

Purpose of the paper. Drawing upon the findings of recent research ((Liu et al., 2020; Miron-Spektor et al., 2018; Schad et al., 2016), our study posits that the anticipation of managers' intention to use, and their satisfaction with Artificial Intelligence (AI)-based tools in healthcare can be effectively predicted through the examination of both paradoxical tensions and paradoxical mindset variables. We contend that a comprehensive understanding of these factors will contribute to a nuanced comprehension of the dynamics influencing the utilization and reception of AI technologies within the healthcare domain. Furthermore, our investigation underscores the pivotal role of paradoxical mindset as a potential mediator in this context, given its inherent nature to reconcile opposing tensions and foster a cohesive framework for the successful implementation and acceptance of AI tools in healthcare settings. This assertion is rooted in a synthesis of extant literature, which suggests that a mindful consideration of paradoxical mindset will significantly enhance our comprehension of the intricate relationships governing the integration of AI in healthcare management and end-user satisfaction.

Methodology. Through explorative research design, a survey-based study was conducted among of a sample of 357 managers operating in the healthcare sector and if, how, and to what extent they were using AI-based tools. The study focused on the role of a paradoxical mindset in mediating these effects.

To develop the questionnaire design, the researchers conducted online workshops with healthcare experts. The questionnaire consisted of four main sections. The first ensured participant anonymity and emphasized aggregate-level statistical analysis. The second provided a comprehensive scenario of AI applications in healthcare. In the third section, the participants declare both their intentions to use AI by leveraging the three-items scale proposed by Venkatesh et colleagues (2012) (e.g., “I intend to continue using AI systems/tools in the future”), and their perceived satisfaction by using the scale proposed by Shin et colleagues (2020) (e.g., “Largely, I am fairly pleased with AI systems/tools”, and so on). We then asked them to report possible paradoxical tension by using a scale adapted from Miron-Spekto et al. (2018), and Anicich et al. (2021) (e.g., “When using AI systems/tools, I need to be flexible while also complying with the company's tight rules”, “When using AI systems/tools, I need to gain new skills while relying on my existing skills”, “When using AI systems/tools, I need to compete and cooperate with others”, “When using AI systems/tools my perception of how much power I have in relation to others changes throughout the day”). Finally we collected their perceptions of their paradoxical mindset by using the scale drawn from Miron-Spektor et colleagues (2018) as well (e.g., “In contexts where I use AI systems/tools I am comfortable dealing with conflicting demands at the same time”, “In contexts where I use AI systems/tools I am comfortable dealing with conflicting demands at the same time , I often experience myself as simultaneously embracing conflicting demands”).

Finally, we asked them for sociodemographic information, including gender, age, education, occupation, organization type, and work experience.

Results. The survey has been distributed via email to 1,890 potential participants from a panel data source. Of the 557 respondents, 207 were excluded due to incomplete responses or lack of regular AI tool use within the last six months prior to the survey. The final sample comprised 357 participants, primarily male (61.90%), aged 35-44 (31.93%), and predominantly medical doctors (91.60%) with university degrees or Ph.D. qualifications. Most of them declared to work in public hospitals (54.34%) and had 1-10 years of experience (53.22%). Utilizing the conceptual framework illustrated in Figure 1 to underpin our rationale and hypotheses, we performed a straightforward analysis of a mediation model by employing Model 4 (Simple mediation model) as recommended by Hayes (2017).

The analysis utilized the PROCESS macro for SPSS: In this model, paradoxical tensions were defined as the independent variable (X), with the paradoxical mindset serving as a mediator (Me) to assess its impact on both individuals' intentions to use and satisfaction, which were considered as dependent variables. Following the approach

suggested by Hayes (2017), the analysis unfolded in two consecutive steps. First, we examined the influence of paradoxical tensions on the paradoxical mindset. Subsequently, in the second step, we scrutinized the effect of the paradoxical mindset on the dependent variables, namely intentions to use and users' satisfaction. This method allowed us to evaluate the hypothesized mediation effect of the paradoxical mindset between paradoxical tensions and both intentions to use and users' satisfaction, shedding light on whether the paradoxical mindset played a crucial role in explaining this relationship.

Preliminarily, our statistical analysis shed light on a direct effect of the paradoxical mindset on both intentions to use ($b = .343, t = 4.516, p = .000$) and users' satisfaction ($b = .286, t = 3.440, p = .000$). In the first step of the statistical analysis, we regressed paradoxical mindset on the independent variable, paradoxical tensions. Subsequently, in the second step, both intentions to use and users' satisfaction were regressed on both paradoxical mindset and paradoxical tensions. In the initial step, we observed a positive and significant effect of the paradoxical mindset regressed on paradoxical tensions ($b = .336, t = 6.149, p = .000$). In the second step, we found a positive and significant effect as the paradoxical mindset significantly and positively influenced the dependent variables—intentions to use ($b = .264, t = .070, p = .000$) and users' satisfaction ($b = .306, t = 3.977, p = .000$). Notably, the dependent variable, paradoxical tensions, also exerted a significant and positive effect on both intentions to use ($b = .343, t = 4.516, p = .000$) and users' satisfaction ($b = .286, t = 3.440, p = .000$).

Research limitations. Despite the promising results, our paper limits its examination to the healthcare sector, emphasizing the need for future research endeavors to broaden the scope of analysis to encompass diverse domains.

Additionally, the focal point on managerial behavior in our study suggests the potential for future investigations to elucidate the role of managers' personal characteristics or traits as moderator factors influencing their inclination to adopt specific practice, e.g., in terms of personality traits in terms of innovativeness, openness to change and so on; leadership style in terms of transformational vs. transactional, or autocratic vs democratic; decision making style in terms of risk tolerance vs. analytical thinking; their adaptability in terms of flexibility vs. problem-solving skills; motivations e.g., as for intrinsic vs. extrinsic motivations, or achievement orientation; time management, cultural sensitivity and so on).

Finally, the study does not deal with how the intention and quality of use differs whether the use is for the healthcare organization, or if it is individually oriented, e.g. whether all medical doctors within a specialization are to use AI, or if an individual doctor recognizes the usefulness of AI for his or her benefit.

Managerial implications. This preliminary research highlighting the significance of paradoxical tensions and mindset as predictors of managers' intention to use and satisfaction with AI-based tools in healthcare carries several managerial implications. Firstly, organizations in the healthcare sector need to recognize and understand the paradoxical tensions that may arise in the adoption of AI tools. Acknowledging the inherent contradictions and managing them effectively can enhance the acceptance and utilization of these tools among managers. This suggests a need for training programs and interventions that target the development of cognitive flexibility and adaptability in navigating paradoxes.

Secondly, the paper shed light on the importance of “cultivating” and “working” for a mindset conducive to embracing AI technologies in healthcare management. Managers should be encouraged to foster a forward-thinking attitude that embraces innovation and acknowledges the transformative potential of AI. Organizations may consider implementing educational initiatives and workshops to enhance the cognitive readiness of managers, promoting a positive mindset towards AI adoption

Thirdly, managerial implications deriving from the study extend to the realm of developing sustainable digital business models with a social orientation. The research suggests that fostering a positive mindset towards AI in healthcare management is not only about individual readiness but also about creating a supportive organizational culture. To build sustainable digital business models, organizations must prioritize a social orientation, ensuring that the integration of AI aligns with societal values, ethical considerations, and broader healthcare goals. This necessitates a collaborative approach involving stakeholders, policymakers, and the community to shape digital transformations that prioritize societal well-being over purely commercial interests. Coherently, in building long-lasting sustainable digital business models, organizations should prioritize user experience and ensure that AI tools are designed to meet the specific needs and preferences of healthcare managers. User-centric design principles and continuous feedback mechanisms can contribute to the development of more user-friendly AI solutions, ultimately enhancing satisfaction levels among healthcare professionals.

Originality of the paper. This paper potentially contributes to the existing literature by examining the novel concept of paradoxical tensions and mindset as predictive factors influencing managers' intentions to utilize AI-based tools in healthcare. The exploration of these psychological dimensions offers a nuanced understanding of decision-making processes, shedding light on the complex interplay between cognitive dissonance and technology adoption within the healthcare managerial context. This innovative approach enhances the theoretical framework for comprehending satisfaction with AI tools and provides valuable insights for both academia and practitioners in healthcare management, and to build longevous business model since they are based on a careful behavioral analysis of its stakeholders.

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Development and Sustainability of Online Pharmacy Sales

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Abstract

This short paper aims to explore the relationship between the development of online sales of pharmaceutical products and sustainability. It is still in a preliminary version and merely presents the topic for which a keyword survey of the Scopus database shows a limited number of papers reporting a lack of research on the topic³. The advantages of pharmaceutical e-commerce, limited to drugs, cannot be attributed only to price, but can include others factors as confidentiality (the fact that online purchasing allows the consumer to maintain physical anonymity) or convenience of shopping (24 hours a day, seven days a week, without having to leave home). For some patients, however, there is a need to be able to rely on the advice and professionalism of the pharmacist, while e-commerce is an increasingly attractive channel when the patient knows exactly what he or she wants to buy. Rather than competing with each other, online and physical pharmacy should be integrated in the perspective of the customer, including sensitivity to aspects of sustainability. The paper contributes to the definition of the topic and concludes with a research agenda.

Key words: sustainability; pharmaceutical e-commerce; professionalism of the pharmacist; online pharmacy.

Framing of the research. *Our research focuses on the sustainability implications of online drug sales, made possible through the development of digitization. Online sales can present relevance in a framework of strengthening the health care system, meeting needs and demands for additional services than those traditionally offered by the physical pharmacy. In the context of the United Nations Sustainable Development Goal (SDG) for 2030, human health is at the center of the SDG agenda (Konduri et al. 2018), so pharmacies, both physical and online, have also been asked to strengthen their contribution to sustainable health policies and thus contribute to the achievement of the three performance dimensions of sustainability: social, environmental and economic. The sustainable development goals place great responsibility on health care personnel, including pharmacists, because they require a great deal of professional development. It is precisely pharmacists who are required to have additional expertise to their professional skills. We refer to the ability of pharmacists to advise the patient-client when he or she has a choice between two or more drugs or when he or she has no indication from the doctor but still intends to initiate treatment and thus purchase drugs, in this case necessarily OTC or SOP. This additional skill is required of both in-person pharmacists and pharmacists in an online pharmacy. In both cases, it is a skill that can give the organization a competitive advantage. Sustainability can be defined as meeting the needs of the present without compromising future generations in meeting their own, sustainability that invests aspects of ecological, social, economic and governance environment, integrating triple bottom line (Wilson, 2015) and ESG (Rezaee 2021) models. Sustainability also encourages organizations to shift from a business-centered to a network-centered operational logic, as they have to deal with a plurality of actors (Pieroni, McAloone, and Pigozzo 2019). In the triple bottom line, achieving the aforementioned dimensions-social, environmental, and economic-as well as being advisable from a purely ethical point of view because it greatly improves, and in some cases even creates, the organization's brand reputation, can also lead to the creation of a competitive advantage and generate shared value. In the case of the drug trade, an additional aspect concerns the nature of pharmacies seen as hybrid organizations (Cavicchi and Vagnoni, 2020) because they lie somewhere between the for-profit and nonprofit sectors. They are indeed business organizations that look at profit opportunities, but they are also health care providers who, by providing drugs, dispense advice in the form of care and counseling, so they contribute to social welfare.*

The advent of digitization, as with other sectors has obviously affected all sectors of the economy, thus including the pharmaceutical sector by originating, for example, e-prescribing, with significant reductions in time and paper for activities dedicated to dispensing. But digitization has also originated online pharmacies, enriching the ways in which people can acquire the medicines they need. Specifically, digitization in pharmacy can be understood as a process of

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³ The Scopus database was queried with several keywords. For example, for a string that had several elements (“sustainab*” AND [“e-commerce” OR “online”] AND “pharma*”) only 18 products were identified moreover only some of them centered on the theme.

using digital technology to bring about changes in value creation, business processes, and business models to provide new value opportunities for the enterprise and customers (Gobble 2018, Gong and Ribiere 2021). Digitization also provides the enterprise with tools to better evaluate its business partners, whether customers or suppliers. However, the exponential increase in data from digital technologies, such as data centers and servers, has contributed significantly to digital pollution by consuming nearly 7 percent of global electricity, an element that highlights aspects of digitization contrary to sustainability (Shashi 2023).

By integrating online sales activities, the pharmacy assumes new technologies with its traditional goals in the more overall context of digitization of the health care system, albeit within a regulatory framework to which compliance is required which we have mentioned (the online prices of OTC drugs are the same as in the physical store, the online channel must carry the logo of the pharmacy or “common,” the pharmacy is authorized to sell in e-commerce only the drugs purchased and in stock - IQVIA,). To make patients aware of the services that online pharmacy can offer, appropriate promotional campaigns are needed to highlight the skills and expertise that pharmacies can make available to patients. It would also be necessary to address the lack of participation by online pharmacists in their association's work within health policies, participation that is actually quite low for physical pharmacies as well. Patient-centered education should still be included in preparing pharmacists to manage their relationships with patients.

Purpose of the paper. Based on the main available literature, our study aims to analyze the ecological, social and environmental sustainability aspects of online pharmacy. In this analysis, we also focus on pharmaceutical logistics, the importance of which, in a market of undifferentiated products for which it is not possible to act on the price lever, at least for drugs, becomes the real way to gain a substantial and defensible competitive advantage. A special focus is reserved for the Italian pharmaceutical market, pointing out how the online drug trade is subject to strict control by the authorities and how this rigidity is also found in the sanction system.

Methodology. Our research analyzed the social, environmental, and economic sustainability of online pharmacies by defining a grid of elements on sustainability issues emergent from a content analysis on the websites of major pharmaceutical e-commerce chains. In addition to the three dimensions of sustainability mentioned above, our analysis also dwells on governance sustainability and crosswise on logistical aspects, relevant to online sales models but particularly to pharmaceutical sales, so as to provide a comprehensive view of the online pharmacy/sustainability relationship. Environmental sustainability can be best pursued by the pharmacy implementing online sales when activities (information, tutorials, etc.) can be carried out through the new model that help reduce pharmaceutical waste, educating consumers on the proper disposal of medicines and providing solutions to reduce pharmaceutical contamination. Environmental sustainability requires the ability to maintain an adequate and constant balance between the amount of resources withdrawn and consumed within the company and the ability to manage the waste subsequently released into the surrounding environment, waste that should have a limited environmental impact and a high degree of regeneration. Pharmacists can find in the digital environment support for a task that is that of environmental educators. Another way that pharmacies would have to reduce pharmaceutical waste would be to reduce their inventory and discourage patients from abusing drugs. This although would probably reduce pharmacy sales. However, pharmacists can, with regard to personal care, advise consumers on greener alternatives (Kreisberg 2007), making them aware of the environmental consequences of their choices. Pharmacies can act to make the supply chain as environmentally friendly as possible, through various alternatives (Xie and Breen 2012). They can choose to use contract distributors, who use environmentally friendly storage, transportation, and packaging methods and who have environmental certifications. They can in the presence of alternatives select the products of pharmaceutical companies in a way that encourages the design and production of greener drugs. Finally, they can provide facilities for home pickup programs for wasted drugs. All this would make the pharmacy environmentally sensitive and, at the same time, enable it to gain a competitive advantage over those competitors who do not have the same environmental sensitivity as they do. That is, customers prefer pharmacies that engage in drug take-back programs, so pharmacies that participate in these projects can help reduce the environmental impact of the pharmaceutical supply chain while increasing their customer base. To the sensitivity of customers and consumers, which has grown widely in recent years, must be added the pressures coming from regulatory and oversight bodies regarding environmental regulation and compliance, and the varying ability of suppliers to innovate along more sustainable parameters. Presence in digital media can support the achievement of these goals by making them visible to an audience that is not only neighborhood-based, but broader and reachable online. If we can comply with the above behaviors, we could certainly contribute to eco-pharmacovigilance, defined as “the science and activities concerning the detection, evaluation, understanding and prevention of adverse effects or other problems related to the presence of drugs in the environment, affecting both humans and other animal species” (Velo and Moretti 2010).

Social sustainability refers to the ability to ensure conditions of social and human well-being, not only in terms of health but also in terms of education and security. These fundamentals, taken together, go to form a corporate social responsibility that companies should pursue and implement. Limited to online pharmacies, at least those that are most attentive and sensitive to the issue, social sustainability is realized through the achievement of at least two objectives: pharmaceutical care and disease prevention. Pharmacy is not limited to dispensing pharmaceuticals as a mere intermediary, but one that follows the patient throughout the evolution of his or her treatment, pharmaceutical care being defined as the responsible administration of drug therapy in order to achieve defined outcomes that improve the patient's quality of life (Hepler and Strand 1990). This definition shows that the main role of pharmacists, and thus of pharmacy, is first and foremost to promote the safe and effective use of drugs and thus to prevent, or at least be prepared to deal with, problems that might arise while taking the drug. This activity of pharmaceutical care implies that the patient is not only followed during therapy but is constantly counseled, especially in the initial phase, but also afterwards, when adverse

effects due to taking the medication might be greater (Kehrer et al. 2013). Pharmacists, and here we come to the second goal represented by disease prevention, can play a crucial role within the health care system. That is, they can contribute to public health by providing patients with the right information on how to improve and maintain their health through disease prevention and healthy lifestyles. That is, by advising people to adopt a healthy diet, accompanied by physical activity and reduction of alcohol consumption and smoking, pharmacies can contribute to improving public health.

Economic sustainability includes the ability of the enterprise to generate income while being able to provide employment to sustain the population. The economic dimension of online pharmacies is explained in relation to managerial orientation and health orientation. As far as managerial orientation is concerned, the small number of portals regularly authorized in Italy for the online trade of drugs, particularly pharmacies, has not led to the decrease in margins caused by increasing competitiveness, which has happened for physical pharmacies (Schmidt and Pioch 2004), but it has nevertheless required the development of a managerial attitude based on creativity and innovation and oriented toward differentiating one's offerings. The role that should be played by the manager of an online pharmacy refers to the selection and motivation of human resources, layout management, warehouse and inventory management, and the proper use and management of information systems for the management control of the activities carried out consistent with the evolution of regulations and markets and the necessary skills (Ottewill, Jennings and Magirr 2000). The health orientation, on the other hand, refers to the already analyzed importance of online pharmacy not just being a distributor of drugs, but instead characterizing itself even more than the physical pharmacy for that information and counseling role that would contribute to social health care (Woodard et al. 2020). Thus, there is a need to shift from a product-oriented to a service-oriented business model and thus favor patients "receiving care" rather than "purchasing products" (Schommer, Olson, and Isetts 2019). The expansion of higher quality professional pharmacy services could be a source of competitive advantage (Singleton and Nissen 2014).

In pharmaceutical service delivery, there are several phases, including implementation and sustainability. These two phases have differences and common characteristics. The implementation phase occurs during the time between the adoption of a service and its integration, while the following definition of sustainability is proposed for pharmaceutical services: Sustainability intervenes in the design of the service as well as in its implementation, routinization and institutionalization over time to achieve and sustain the expected service outcomes (Crespo-Gonzales, Garcia-Cardenas and Benrimoj 2017). The purpose of the implementation phase is to incorporate new or evidence-based services into practice while achieving the expected benefits. The purpose of the sustainability phase, on the other hand, is to make services routine by seeking their continuous improvement, primarily through lessons learned. Some authors suggest that the sustainability phase is a concomitant phase with the implementation phase (Pluye, Potvin, and Denis 2004) and others suggest that it is independent (Moore et al. 2015) and thus begins when the implementation phase is over, being the last phase of the health services research process. The future role of all pharmacists will be to serve predominantly as service providers. The main challenge to date has been the implementation of these services. The next challenge, once implementation has occurred, is to make these services sustainable, that is, to maintain and improve patient care over time.

Results. The results achieved by our analysis show an increased attention of online pharmacies regarding sustainability issues. The growing awareness that customers and consumers have regarding sustainability, particularly environmental sustainability, has contributed greatly to this increased awareness. This awareness has grown significantly in recent years, fostered in part by the amplifying role exerted by digital media. In Italy the approach followed for online drug trading is extremely strict, given the special conditions required by the nature of a regulated market. The possibility of online sales of medicines in Italy is quite recent, having been enabled in 2014 recognizing the possibility of online sales of medicines for pharmacies, parapharmacies and pharmaceutical corners⁴. In contrast, the sale of prescription drugs is absolutely prohibited in Italy, differently than in other countries (for example in Germany), as a measure to prevent abuse and potential toxicity.

The protection towards the patient is also reflected in the penalty system, which affects the remote sale of prescription drugs, the illegal sale of drugs online, and the distribution of counterfeit drugs (Schramm 2015). A pharmacy owner interested in starting an e-commerce business must send an application for authorization to the relevant regional authority and, once obtained, must submit an application to the Ministry of Health for the granting of the National Identification Logo and the registration of the pharmacy and its website in the Ministry's portal, where the list of sites authorized for online sales can be found. The National Identification Logo constitutes a fundamental element for the sale of drugs online, because it allows the buyer to verify whether or not the pharmacy is authorized for sale⁵. All of these constraints could contribute to explain the small number of pharmacies operating online sales, which at the end of 2023, out of a total of nearly 20,000 pharmacies in Italy (to be precise, the figure is 19,997), numbered 1,088, while there were 1,446 portals regularly authorized in Italy for online drug trading. Internationally, pharmaceutical e-commerce is a fast-growing sector, although not yet comparable to other sectors of online commerce, first and foremost food. Italy has become the third largest market in Europe, behind Germany and France, Germany in which the development of pharmaceutical e-commerce is favored by the possibility of also selling prescription drugs online.

⁴ Legislative Decree No. 17 of February 19, 2014 that implemented Directive 2011/62/EU.

⁵ Consequently, it must be on all pages of the site, without any graphic changes, while it can be resized if there is a need to adapt it to the graphic requirements of the web page. On the other hand, it is not needed on web pages devoted to products, such as supplements and cosmetics, which are still saleable but different from drugs.

In Italy, the sale of drugs online is limited to drugs available in a special list that can be consulted on the AIFA website and includes OTC (Over The Counter) drugs and SOP (Senza Obbligo di Prescrizione) drugs (Cillo and Bernardini 2016). OTC drugs require no prescription, can be purchased without pharmacist intermediation, and can be freely advertised toward the public. SOP drugs also require no prescription and since May 2017 can be advertised toward the public but, limited to the point of sale, cannot be displayed over the counter because they require the pharmacist's intermediation. Therefore, it seems clear that for these drugs, online sales eliminate the pharmacist's intermediation requirement, which is necessary if one goes directly to a pharmacy. Parapharmaceutical and homeopathic products can also be purchased online, unless the manufacturer has specified that the medicine can only be sold with a prescription, a scenario in which it can only be purchased in physical outlets. Regulatory compliance then requires that the price of drugs sold online must mandatorily be the same as that charged within the pharmacy, so that physical outlets do not discriminate to the advantage of online pharmacies. However, this obligation does not affect the sale of all other products in the commercial sector, such as cosmetics or medical devices, whose online price may differ from the price charged in the pharmacy.

Research limitations. *The research is at a still early stage and aims to frame the problem of sustainability for the development of online pharmacy sales preliminarily on the study of content analysis of secondary materials. The first limitation concerns the methodological approach, since subsequent steps of the research may also consider primary source data through both qualitative and quantitative surveys. In addition, the different forms of online sales are considered, focusing strictly on online pharmacies only, not considering the other portals authorized to trade drugs online, which at the end of 2023, there were 358 in Italy. In addition, our study does not deal with revealing whether the purchase of drugs is doctor-induced or results from the buyer's personal evaluations.*

Managerial implications. *Our study first provides useful insights into the relevance of sustainability issues for online drug sales companies. From a managerial perspective, it specifically examines the management aspects of pharmaceutical logistics arising from online sales for their impact on sustainability. All online pharmacy managers should give this phase the same importance as it is given by the buyer, especially with regard to delivery timing.*

Pharmaceutical logistics, both for physical and online pharmacies, deals with the storage and distribution of medicines, active ingredients, and biological products from supplier to consumer (Pani 2015). The main features of pharmaceutical logistics can be found in maximum traceability and inventory control (a necessary preventive measure to detect batches of drugs affected by anomalies or irregularities), accurate quality control (proper storage of drugs requires the design of special areas in the warehouse designed to safely store drugs), temperature-controlled storage and special transport of products, and reduced delivery times (Ciulla 2021). Logistics is the critical success factor on which online pharmacies are being measured. If properly harnessed, it can prove to be a strategic strength for their success. Last-mile logistics refers to the last step in the logistics process that begins at the moment the goods leave the last level of the distribution network, which can be a warehouse, a sorting hub or the pharmacy itself, and ends with the ordered goods arriving at the final destination agreed upon with the buyer (Council 2017). Of all pharmaceutical logistics, this is the only stage that is truly visible to the consumer, not surprisingly, final delivery services are the most important aspect an online consumer considers after purchase. Therefore, punctuality, traceability and quality of delivery services are the drivers on which to leverage to improve the overall satisfaction level. Very often, customers demand that the order be delivered based on their needs, i.e., they would like to control and personalize the time of receipt. What makes the difference in a market of undifferentiated products, such as pharmaceuticals, is the manner in which delivery takes place. Competitors who want to remain competitive in the digital marketplace and attract new customers should develop a delivery model that includes same-day delivery and, if possible, delivery by appointment. How deliveries are handled also affects sustainability, both environmentally and economically. The operator responsible for final transportation must design deliveries by trying to unite customers living in the same area and thus reduce delivery time and also the number of stops. The customer, on the other hand, requires precise and narrow delivery windows at the expense of fewer customers served in a single delivery round. As a result, making very circumscribed and precise appointments available to the buyer generates an increase in the average distances dedicated to each order, a decrease in the number of stops per delivery round, and thus less sustainability. Among other things, the timeslots with the highest concentration of demand become those in the lunch break, second half of the afternoon and early evening. Thus, it turns out that customer density, i.e., the number of points visited by the delivery vehicle in a specific geographic area and in a specific time window, is crucial for the operator, resulting in higher or lower distribution costs and thus in different sustainability (Boyer, Prud'homme and Chung 2009).

Originality of the paper. *Pharmacy takes on a significant role in terms of sustainability, for example at the social level. The phenomenon of digitization and the development of online sales also has peculiar characters due to the nature of regulation affecting the sector with its underlying purposes. An important area also for the study of economic and green sustainability is the logistical processes associated with the development of e-commerce in the pharmaceutical sector. In this area, a research agenda directed toward better understanding the impact of online pharmaceutical sales development on sustainability could involve (1) content analysis of online pharmacy and parapharmacy sites to identify issues related to sustainability; (2) case studies of pharmaceutical e-commerce and qualitative interviews with experts; (3) discussion of data emerging from the previous steps to build a set of hypotheses/models on the relationship between pharmaceutical e-commerce development and different types of sustainability; and (4) a survey directed toward testing the hypotheses they discuss.*

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Track 16
Growing resilient Italian SMEs - Special Track

The resilience of family firms: exploring the role of collaborative response with supply chain partners

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Abstract

The scholarly understanding of organizational resilience has gained momentum recently, in light of the numerous adversities that firms have encountered over the last years, encompassing health, geopolitical, environmental, and economic challenges. Although family firms are renowned for their resilience, the extent to which they capitalize on their supply chain relationships to effectively respond to and recover from adversity remains underexplored. This oversight is notable given the interconnected and interdependent nature of modern supply chains, which suggest that a firm's resilience is a collective achievement, extending beyond individual efforts. Moreover, for family firms these relationships are especially crucial as they are not just strategic ties but also integral part of their socioemotional wealth (SEW) endowment. To fill this gap we develop an interpretive research based on six case studies of Italian family firms addressing multiple unanticipated adversities in the years 2021-2023. Through a process-based approach, we observe that family firms develop a collaborative response with their supply chain partners, blending co-protecting and co-adapting behaviors in the face of adversity. We also unveil the underlying determinants of this collaborative response and highlight its significant implications for the family firm, providing valuable insights into the mechanisms through which family businesses orchestrate their unique relational dynamics to enhance resilience.

Key words: family firms; supply chain; resilience; socioemotional wealth

Framing of the research. *The academic debate on firm resilience has recently experienced significant growth, prompted by various global events that have severely impacted businesses over the last years. Notable examples include the Covid-19 pandemic, the financial crisis, the challenges of climate change and related natural disasters, as well as the more recent conflict in Ukraine. These occurrences have brought the concept of organizational resilience into sharp focus, as both researchers and practitioners seek to better understand how organizations can effectively withstand and recover from disruptive events (e.g. DesJardine et al., 2019; Branzei and Fathallah, 2023; Smith et al., 2023).*

In this context, family firms, despite seemingly being more vulnerable to adversities due to resource constraints and the unique complexity arising from the overlap between family and business interests, are often found to exhibit superior resilience compared to non-family firms (e.g., Amann and Jassaud, 2012; Eckey and Memmel, 2023). Prior studies frequently interpret the resilience of family firms as a beneficial tendency to protect their socioemotional wealth (SEW) endowment by enduring hardships through their close family bonds and distinctive long-term orientation (e.g., Al-Tabbaa et al., 2023; Eckey and Memmel, 2023). The SEW theoretical perspective captures the impact of a family on the firm's management and strategic decisions and refers to "non-financial aspects of the firm that meet the family's affective needs, such as identity, the ability to exercise family influence, and the perpetuation of the family dynasty" (Gómez-Mejía et al., 2007, p. 106). SEW has been used as a broad theoretical framework that encompasses the non-financial benefits that family owners receive from their ownership position in the firm and that differentiate them from their non-family counterparts. The family firm's pursuit of SEW preservation is central to explaining the family's motivation to take every possible measure to survive when faced with severe adversities (Alonso dos Santos et al., 2019; Gomez-Mejia et al., 2018; Llanos-Contreras and Jabri, 2019). The unique sense of responsibility towards past generations along with the relentless commitment to pass the business to future ones make them do whatever it takes to make the firm survive in the face of adversities, as "if the firm fails to survive, SEW would be completely lost" (Gómez-Mejía et al., 2010, p. 232). The SEW preservation drives family businesses to prioritize the long-term health and well-being of the business, contributing substantially to their resilience during adverse times. Thus, the long-term orientation of family firms is considered the key differentiator that characterizes the resilience in family firm (e.g., Acquaah et al., 2011; Amann and Jassaud, 2012; Beech et al., 2020; Calabrò et al., 2021).

This long-term extension of family priorities often manifests through socially extended priorities where the firm "manage for the long run" as well as "for the benefits of all stakeholders" (Le Breton Miller and Miller, 2022), building enduring bonds not exclusively limited to family members but extended to trusted individuals from different constituencies,

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including employees, customers, suppliers, and the local community (Gomez-Mejia et al., 2011; Gomez-Mejia et al., 2023). This approach distinguishes family firms adopting an extended SEW toward those instead focused on a restricted SEW. While family-related priorities are a common trait of family firms, some family firms conceive SEW preservation only around them (restricted SEW) like, for example, having family members dominate management and board membership regardless of qualifications, using business resources to settle family conflicts or engaging in unrequited altruism or nepotism. Conversely, other family firms include in their SEW preservation benefits that go beyond the family and include other stakeholders as well (extended SEW). The latter approach means that key priorities for family firms include “enhancing the family’s reputation with stakeholders, forming sustaining relationships with partners to increase the chances of firm survival, and investing in the community to ensure an abundance of goodwill toward the family and its business” (Miller and Le Breton Miller, 2014, 717).

Such an approach proves beneficial during challenging times. For example, Albuquerque, Koskinen, Yang, and Zhang (2020) demonstrated that family firms with strong reputations for social and environmental contributions towards their communities performed better during the last pandemic. Moreover, higher levels of loyalty from stakeholders and mutually beneficial relationships with them can create a ‘safety net’ during adversities and contributing to the firm’s overall resilience (Yilmaz et al., 2024). Despite its significance, most of empirical studies on family firm resilience under investigated this relational aspect. Even studies interested in understanding how the relational capabilities of family firms drive their resilience in times of crises have mainly focused on internal social capital (Engeset, 2020) rather than considering the importance of external relationship (Salvato et al., 2020). In other words, previous literature successfully captured the essence of restricted SEW as driver of family firms’ resilience but mostly neglected its extended side (Le Breton-Miller and Miller, 2022).

Purpose of the paper. To fill this gap, this study examines the relationships that family firms have with nonfamily stakeholders, investigating its role in generating resilience. Specifically, we aim to answer the following research question: how do family firms orchestrate their supply chain relationships to effectively respond to challenging times?. In times of unanticipated adversities, supply chains frequently face disruptions, compelling firms to search unprecedented types of resources and rely on collaborative strategies with their supply chain partners to successfully navigate through a challenging environment (Zhao et al., 2022).

Our aim is to investigate the role that relationships at the supply chain level have for family firms resilience by unveiling its dynamic evolution in times of adversity as well as their distinctive characteristics. This approach is in line with recent emphasis placed on the need to adopt a process-oriented perspective in studying family business resilience (Yilmaz et al., 2024). Although the mainstream literature on resilience in family business has clearly acknowledged that resilience is an ongoing process rather than a static feature (Brewton et al., 2010; Fisher et al., 2019), only a few recent studies have so far stood out for adopting a process-based perspective in the family business context. For example, Smith et al. (2023) explained through a representative case study the process by which individual, family, and business levels interact in developing organizational fortitude to cope with the challenges of multiple unexpected adversities. Azouz et al. (2022) examined the impact of family religiosity on firm resilience, identifying a “resistance phase” where faith and belief in destiny help families face challenges, leading to a proactive “rebound phase” where religious commitment drives resource mobilization and trust-building. Rather than solely focusing on qualities, a process-based approach allows consideration of trait, capacity, and outcome perspectives (Hartmann et al., 2022). It allows to capture the dynamic strategies characterized by learning and positively adapting in response to crises (Beech et al., 2020) that family businesses employ to navigate through challenges and disruptions (Anggadwita et al., 2022; Azouz et al., 2022; Fisher et al., 2019).

Methodology. To examine our research question, we adopted an interpretive research methodology (Mees-Buss et al., 2022; Glaser and Strauss, 1967) and conduct an in-depth analysis of six representative cases of family firms in the Italian food industry. We adopted a longitudinal research design, spanning three years from January 2021 till February 2023.

Since the beginning of 2020, the family firms faced unprecedented geopolitical, environmental, and economic challenges, necessitating crucial decisions to navigate disruptions in operations and supply chains (Wulandhari et al., 2023). During Covid-19 pandemic, food industry firms continued operating, even during lockdowns. However, they faced an unprecedented mix of spikes and falls in demand. This was especially challenging due to changing consumer habits, with preferences shifting towards certain foods and beverages over others. Besides, prolonged labor and material shortages impose them to reconsider their supply geography to diversify operational risks. While they were coping with these events, the Ukraine war presented further challenges, forcing a relocation of some supply sources (to offset geopolitical risks and find alternatives for disrupted relationships) and intensifying cost variability in energy and transportation. Furthermore, in 2023 several natural disasters disrupted the Italian food industry. In particular, a major flood in the Emilia Romagna region in May 2023 caused significant damage and disruption to farming activities, leading to repercussions at a national level. The sequence of these unforeseen events created an exceptionally challenging environment that tested the family firms’ resilience. Nonetheless, it currently offered an unprecedented context for research, providing a unique opportunity to “revisit the phenomenon” of family firm’s resilience by analysing multiple crises and enriching our interpretive model with detailed longitudinal insights, crucial for abduction (Timmermans and Tavory, 2012: 176).

Given that resilience is a process-based phenomenon, a multi-case exploratory approach is most suitable (Eisenhardt, 1989; De Massis and Kotlar, 2014), particularly with a longitudinal research design that captures “the temporal,

unfolding nature of crises” and shows patterns before and after an exogenous resilience triggering event (Doern et al., 2018, p. 403).

The selection of cases was not random and guided by three criteria. First, we identified case firms that fit the definition of family firms as provided by Chua et al. (1999). To account for the diversity among family firms (Kammerlander and Ganter, 2015), we included firms with both family and non-family CEOs, various governance structures (like family involvement in the supervisory board, advisory board, and/or family council), and different generations (from 1st to 4th generation) (Eisenhardt, 1989). Second, we chose family firms headquartered in Italy to ensure similar starting conditions and contextual factors. Third, we selected firms in the food industry that were genuinely interested in the research and could provide access to data and information over the research period. These criteria align with the standard case design approach of selecting “cases with common antecedents likely to influence the focal outcome and then studying the intervening process” (Eisenhardt, 2021, p. 149).

We focused on the food industry for three reasons: 1) most Italian companies in this sector are family businesses and play a vital role in promoting tradition and culture in the national economy; 2) given the complexity of food processing and their typically low level of vertical integration, these companies have extensive and varied supply relationships (ranging from raw material and ingredient suppliers to service providers), making them particularly relevant for our study; 3) the food industry faces unique challenges due to the perishability of food, variability in quality and availability of raw materials (Das et al, 2023), and risks associated with extreme weather induced by climate change (Zhao et al, 2023). These factors make the industry particularly vulnerable to disruptions and heavily reliant on supply chain coordination, making it an ideal context to study how family firms orchestrate their supply chain relationships to respond to and recover from disruptions.

Desk research was used to identify firms that met the criteria, resulting in a list of potential cases. We sent invitations to these firms, and if they responded positively, we arranged a follow-up call to address any questions and explain participation requirements. The final number of cases was not fixed initially but rather was shaped by theoretical considerations and practical factors like data availability. Initially, we started this research having eight cases, but two of them have been excluded after the first interview for different reasons: the first company, despite initial interest, did not provide in-depth data access; the second, while family-controlled, had no family members involved in management, making it less relevant to our study. Thus, we finalized with six cases, representative of the size, product categories, and supply chain complexity of the Italian food industry.

Results. *Our research uncovers the pivotal transition that firms must navigate to showcase resilience, transitioning from a reactive phase to a proactive one. In the family business context, this evolution is marked by a shift from a prevention focus— aimed at avoiding losses in their relationships - to a promotion focus - which seeks to improve and enhance these relationships. In the face of adversity, family firms adeptly blend these two approaches by orchestrating their relationships with supply chain actors, leveraging the unique characteristics inherent to these connections. More precisely, we pinpoint three distinctive traits that foster the development of co-protective and co-adapting behaviors, leading to a collaborative response during crises. First, family firms share deep roots with most of the supply chain actors. These roots are frequently grounded in a common local origin that facilitates a deeper understanding of mutual needs, simplifies the communication and help supply chain actors better identify potential complementarities. Geographical proximity also reduces logistic complexities and improve coordination and responsiveness. Additionally, many of these relationships have inherited roots, being passed down from previous generations. The enduring nature of these bonds, coupled with a genuine sense of affection, yields multiple benefits. Family firms often receive priority treatment during challenging times, experience valuable forms of collaboration, and are shown significant levels of gratitude from their supply chain partners (which translates into lower costs and greater responsiveness).*

Second, we observed that family firms tend to replicate the way they interact within the family also with external parties, creating family-like relationships that are frequently informal. Family firms and their suppliers sometimes operate even without formal contracts, valuing a handshake or one’s word holds more highly. This informal governance approach fosters spontaneous collaboration and seamless integration between the involved partners, strengthening trust and cooperation. Nonetheless, what make these relationships unique is also the family firm capability to intertwine personal and professional bonds. The human connection in these relationships is coupled with a reciprocal sense of loyalty, fostering respect and satisfaction that discourages considering offers from competitors, as sentiment shared by both parties.

Thirdly, a key facilitator of the collaborative response in the face of adversity is fast decision-making. Is not new to the literature that family firms often have centralized decision making power in a few family members and simplified decision making processes - where decisions are made at “the dinner table without the need to convene meeting”. The governance of relationships with supply chain actors mirrors this approach, often involving direct dialogue between the owners of both businesses. This owner-to-owner communication enables quicker decisions. And even in larger firms, where decision are more formalized and direct contacts between owners are limited to exceptional situations (or moments of socialization), supply chain actors feels that the family firm is really attentive and responsible in how treat their partners. The ability to make fast decisions also grants family businesses greater vision and quicker action. This happens because family firms exhibit a strong commitment to facing challenges head-on, leveraging personal responsibility and family (financial) resources. They also have privileged access to a series of information gathered through informal

contacts and can use that information to make more timely decisions. This approach has enabled family firms to find mutual solutions with supply chain actors and make rapid decisions, even amidst regulatory chaos.

Research limitations. This study focuses on the Italian food industry, thus it remains unclear whether these findings hold across different economies, industries, or regions, or whether they depend, for instance, on the cultural and economic environment in which our cases are grounded (e.g., the presence of industrial district effects cannot be excluded). A replication of our framework in other settings will increase the generalizability of our findings. Secondly, in our sample, we have only family firms in which family members are involved in management. Whilst these boundary conditions permit the development of in-depth insights regarding the research questions, they may limit insights regarding heterogeneity among family firms.

Originality of the paper. By introducing the concept of collaborative response, we contribute to the management literature by analyzing the behavioral and relational mechanisms that characterise the relationship between family businesses and their supply chain partners. Specifically, we demonstrate how these relationships adapt in the face of diverse and critical situations and how they differ from more traditional supply chain relationships when faced with disruptions. Further, this research contributes to the literature on organizational resilience by adopting a process-based approach that shows longitudinally how firms react and proactively respond to multiple adversities. Although it is conventional wisdom that resilience is a process that develops over time, studies analyzing this temporal development are still scarce. Lastly, while some studies indicate that the pursuit of SEW may be compromised when the firm performance is under hazard or, more broadly, in face of disruptive events, other studies emphasize the unique commitment it creates over the firm's long term survival and its pivotal role to explain the superior resilience of family firms. Our findings underscore its essential role in fostering unique connections of the family firm with the supply chain and establish norms of reciprocity which enable superior protection and adaptations mechanisms during adversities.

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Verso una Misura di Resilienza per le Piccole e Medie Imprese

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Abstract

La sempre maggiore frequenza e severità di shock di natura ambientale, economica, geopolitica e sanitaria, rendono centrale il concetto di resilienza organizzativa nella ricerca economico-manageriale, specialmente con riferimento alle piccole e medie imprese. Gli studi finora condotti hanno offerto una molteplicità di definizioni e concettualizzazioni della resilienza, rendendo il tema molto vago e pressoché privo di significatività sia a livello di ricerca empirica sia sul piano operativo. Per rispondere a tali criticità, il presente paper si pone l'obiettivo di concettualizzare un indice di resilienza testabile empiricamente. A tale fine, il nostro studio si propone di sviluppare un framework teorico finalizzato all'individuazione di un indice per le piccole e medie imprese, ma applicabile anche ad altre realtà produttive, che possa riflettere la duplice capacità di assorbire la volatilità derivante da shock esterni attraverso la loro struttura interna e di trasferirla ai propri stakeholders interni ed esterni.

Parole chiave: Resilienza organizzativa; PMI; Shock; Struttura interna; Trasferimento del rischio.

Inquadramento della ricerca. *L'articolo si inquadra nell'ambito dell'ampio dibattito nella letteratura economico-manageriale sulla concettualizzazione e operazionalizzazione del concetto di resilienza organizzativa. La pandemia da Covid-19, le crescenti crisi climatiche, la guerra in Ucraina e il recentissimo conflitto in Medio-Oriente sono gli ultimi segnali della capacità di shock esterni di mettere alla prova la sopravvivenza delle imprese, specialmente delle piccole e medie realtà produttive (di seguito "PMI"). La sempre maggiore frequenza e severità di tali shock hanno attribuito centralità al concetto di resilienza (di seguito anche "resilienza organizzativa") che sta assumendo un ruolo pervasivo tanto nella ricerca economico-manageriale quanto nei programmi di autorità regolatrici. Sebbene il tema abbia recentemente acquisito una crescente rilevanza a livello di studi manageriali (ad es., Clément & Rivera, 2017; DesJardine et al., 2017; Linnios et al., 2014; Linnenluecke, 2017; Williams et al., 2017; Hillmann & Guenther, 2021), è stato criticato per essere vago e privo di un costrutto teorico coerente, il che lo rende poco significativo a livello di ricerca ed in termini manageriali (ad es., Amann & Jaussaud, 2012; Burnard & Bhamra, 2011; Linnenluecke, 2017).*

Gli studi finora condotti si sono sviluppati lungo cinque principali filoni di ricerca che hanno esaminato la resilienza in termini di risposte organizzative a minacce esterne, affidabilità organizzativa, punti di forza dei dipendenti, adattabilità dei modelli di business o principi di progettazione che riducono le vulnerabilità e interruzioni delle catene di approvvigionamento (Linnenluecke, 2017). Nonostante le similarità, i filoni richiamati hanno concettualizzato la resilienza in maniera diversa. Nello specifico, la resilienza è stata definita come capacità, abilità, caratteristica, risultato, processo, comportamento, strategia o approccio, tipo di performance e financo come una combinazione di tutti questi elementi (Hillmann & Guenther, 2021). Inoltre, alle differenze sul piano definitorio corrispondono anche diverse modalità con cui il concetto è stato operazionalizzato, con pochi spunti per misurare la resilienza alle aversità future. Infine, il concetto è stato esaminato sotto una molteplicità di lenti teoriche, tra cui la resource-based view, la dynamic capabilities perspective, la teoria sull'organizational ambidexterity, la social-capital theory e la upper echelons theory (Su & Junge, 2023).

Sebbene la produzione scientifica sul tema della resilienza organizzativa si sia rilevata estremamente utile per una generale concettualizzazione dell'argomento, il progresso nella sua operazionalizzazione e misurazione è una delle traiettorie di ricerca che restano ancora da percorrere, alla quale si legano una molteplicità di sfide (Linnenluecke, 2017; Hillmann & Guenther, 2021). A tale riguardo, la letteratura si è posta diversi interrogativi, tutt'ora pressoché irrisolti, su come dare un contenuto di operatività al concetto di resilienza. In particolare, il dibattito si incentra sulle tecniche di misurazione, sulla presenza di un attributo di resilienza ancor prima della risposta organizzativa al verificarsi

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di certi eventi avversi, sugli strumenti più adeguati a identificare la presenza o meno della resilienza, sulla idoneità della resilienza ad essere uno strumento soggetto al controllo del management, e così via (Linnenluecke, 2017).

Finalità del paper. La finalità del presente studio è di contribuire e colmare il gap nella letteratura attraverso la concettualizzazione di un framework teorico prodromico all'individuazione di un indice di resilienza. Lo scopo di tale indice è di riflettere e testare empiricamente la capacità delle imprese, con particolare riguardo alle PMI, di assorbire internamente e trasferire alla propria rete di stakeholders interni ed esterni la volatilità risultante da shock positivi e negativi nei ricavi.

Metodologia. Il paper si fonda su un duplice approccio metodologico.

In primo luogo, detto studio si basa su un'analisi bibliometrica. La bibliometria può essere definita come una branca dell'informatica che mira a misurare l'impatto delle pubblicazioni scientifiche e il relativo livello di diffusione della conoscenza attraverso tecniche statistiche (Broadus, 1987; Cuccurullo et al., 2016; Merigó et al., 2015). Questo tipo di analisi consente ai ricercatori di esaminare una quantità maggiore di dati rispetto alle review sistematiche della letteratura, pur mantenendo un elevato livello di rigore, solidità scientifica, trasparenza e replicabilità (Dada, 2018; Rey-Martí et al., 2016). L'utilizzo di tecniche bibliometriche in questo lavoro è finalizzato all'analisi delle pubblicazioni, delle citazioni e delle fonti informative in ambito accademico per individuare le principali tendenze con riferimento alla produzione scientifica sul tema della resilienza organizzativa. Per caratterizzare i dati bibliografici, il numero di pubblicazioni, le citazioni, le citazioni per paese, gli autori, questo articolo utilizza indicatori bibliometrici. Inoltre, l'articolo esamina le strutture intellettuali che mostrano l'impatto degli articoli nella comunità scientifica, nonché le reti sociali che evidenziano la collaborazione tra autori e Paesi. Le elaborazioni statistiche sono state eseguite utilizzando Bibliometrix, un pacchetto bibliometrico di RStudio sviluppato da Aria & Cuccurullo (2017), per ottenere una mappatura scientifica della letteratura indagata, principalmente da una prospettiva concettuale. Il processo di analisi segue due fasi:

1. Raccolta dei dati;
2. Analisi bibliometrica per livelli.

La fonte primaria di dati utilizzata per il presente lavoro è la banca dati Scopus di Elsevier, solitamente annoverata tra le più complete nella disciplina del business e del management (Zupic & Čater, 2015). L'arco temporale considerato va dal 1992 al 2024. La scelta risponde alla necessità di considerare l'intervallo più ampio possibile per dare una prospettiva globale e completa alla ricerca. Infatti, il 1992 è la data a cui corrisponde la prima pubblicazione indicizzata in Scopus sulla resilienza organizzativa. La query di ricerca adottata, che coinvolge i campi titolo, abstract e parole chiave, per identificare il corpus di ricerche pertinenti (Crossan & Apaydin, 2010; Pisani et al., 2017), è presentata nella Tabella 1.

Tabella 1. Search query adottata in Scopus.

Termini di ricerca in Scopus		
Field Tag	Titolo, Abstract e Parole chiave	TITLE-ABS-KEY ("organizational resilience" OR "business resilience" OR "management resilience" OR "corporate resilience" OR "enterprise resilience" OR "resilient organization")
Boolean		AND
Area Tematica	Business, Management and Accounting, Economics, Econometrics and Finance	LIMIT-TO (SUBJAREA, "BUSI") OR LIMIT-TO (SUBJAREA, "ECON")
Boolean		AND
Linguaggio		LANGUAGE(ENGLISH)
Boolean		AND
Tipo di documento	Articolo, Review	LIMIT-TO (DOCTYPE, "ar") OR LIMIT-TO (DOCTYPE, "re")

Fonte. Elaborazione degli Autori.

Una gamma così ampia di parole chiave è stata ritenuta utile per garantire che la raccolta di letteratura fosse la più completa e comprensiva possibile. Per contro, le aree tematiche sono state limitate a quelle maggiormente coperte dai lavori accademici in materia di business, management, accounting, economics, econometrics e finance. Per identificare gli articoli da includere nella nostra review, abbiamo condotto una ricerca completa in più fasi (Haddaway et al., 2022), che ha portato ad un numero finale di articoli elegibili per l'analisi bibliometrica pari a 784.

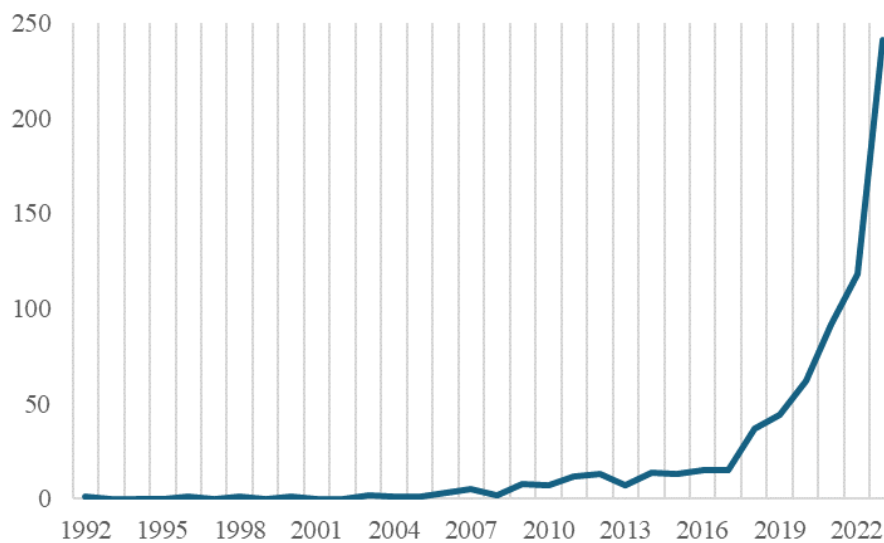
Le analisi descrittive sono state condotte a ciascun livello sul campione di articoli idonei per le analisi bibliometriche. Successivamente, le tecniche bibliometriche sono state implementate utilizzando strutture concettuali, intellettuali e sociali a ogni livello di analisi.

In secondo luogo, per ovviare ai limiti della attuale ricerca in materia, evidenziati dalla review bibliometrica, è stato adottato un approccio teorico per la modellizzazione di un indice di resilienza.

Risultati. Nel corso del loro ciclo di vita ogni impresa è inevitabilmente chiamata ad affrontare avversità che minacciano la continuità aziendale e le associate performance. Per tale ragione, gli studiosi in ambito economico-manageriale hanno iniziato a interrogarsi sulla natura e l'impatto di tali crisi e come le organizzazioni si preparano, rispondono, e superano tali avversità, esaminando al contempo la loro capacità di preservare determinati livelli di performance, di riprendersi da situazioni di crisi indotte da eventi straordinari e di prevenire l'associato rischio di fallimento (Meyer, 1982; Perrow, 2011; Roux-Dufort, 2007; Sine & David, 2003; Wan & Yiu, 2009; Williams et al., 2017). Più di recente, l'aumento del grado e numero di sfide che minacciano le organizzazioni (quali pandemie, crisi climatiche, guerre ecc.) ha determinato una maggiore attenzione degli studiosi rispetto al tema della resilienza organizzativa, specialmente con riferimento alle PMI e imprese familiari (Conz et al., 2020; Iborra et al., 2020; Casprini et al., 2022). In risposta a tali trends, molti accademici si sono interrogati sul come sviluppare la resilienza non solo in risposta alle avversità ma per mitigarle proattivamente, ovvero ancor prima che si verifichino (Van Der Vegt et al., 2015; Williams & Shepherd, 2016; Williams et al., 2017).

Le analisi descrittive della review bibliometrica condotta hanno evidenziato un aumento esponenziale della produzione scientifica in ambito economico-manageriale sul tema della resilienza organizzativa (Figura 1). Tale aumento si è realizzato a partire dalla pandemia da Covid-19 e ha riguardato specialmente Inghilterra, Stati Uniti, Australia, Canada, Italia e Germania. Tuttavia, all'aumentare dell'interesse verso il tema non è corrisposta una parimenti attenta declinazione operativa dello stesso. Nello specifico, la review ha evidenziato una scarsità di tentativi di operazionalizzazione del concetto di resilienza, con un'assenza pressoché totale di indici di misurazione.

Figura 1. Produzione scientifica annuale in materia di resilienza.



Fonte. Output di Bibliometrix su dati estratti da Scopus.

Gli studi sulla resilienza organizzativa evidenziano infatti che si tratta di un concetto multidimensionale e che include molteplici livelli di analisi che vanno da quello individuale fino a quello industriale (Hillmann & Guenther, 2021; Casprini et al., 2022). Uno degli elementi di maggiore confusione intorno a tale tema si lega all'evento in relazione al quale detta resilienza viene spiegata. A tale riguardo, Hillman & Guenther (2021) ordinano le definizioni presenti in letteratura sulla resilienza in relazione al fenomeno che origina il cambiamento, individuando diversi filoni di studio. Sebbene riteniamo che gli effetti derivanti dal fenomeno del cambiamento siano spesso sovrapponibili, ai fini del presente lavoro ci interessiamo con particolare riguardo agli studi che esaminano la resilienza in relazione a shock. Diversi studi di organizzazione in questo filone argomentano che le organizzazioni resilienti sono quelle in grado di rispondere agli shock adottando nuove routine organizzative e nuovi processi (Dewald & Bowen, 2010), di aumentare la propria produttività (Horne & Orr, 1998), di trasformare condizioni avverse in opportunità organizzative e di crescita (Kantur & Iseri-Say, 2012), di sviluppare nuove configurazioni organizzative (McCarthy et al., 2017), di sviluppare piani efficaci sia per la ripresa a breve termine che per il ripristino dell'operatività a lungo termine (Sahebjamnia et al., 2015), di mantenere rendimenti sopra la media (de Oliveira Teixeira & Werther, 2013) e infine di assorbire gli shock (Boin & van Eeten, 2013; Gimenez et al., 2017; Linnenluecke et al., 2012; McCann et al., 2009; Williams & Shepherd, 2016).

Parte degli studi citati concettualizzano detta resilienza come capacità di assorbimento degli shock fornendo però

limitati spunti di ricerca empirica. Pertanto, sulla base dei limiti della ricerca esistente in materia, ulteriormente evidenziati dalla nostra review, argomentiamo, con particolare riguardo alle PMI, che la resilienza non è riconducibile solo alla capacità di assorbimento degli shock. Al contrario, essa emerge dalla capacità delle imprese di mitigare la vulnerabilità indotta dalla propria struttura interna rispetto a shock esterni riducendo o aumentando i costi fissi e trasferendo la volatilità degli stessi shock mantenendo un margine di contribuzione costante. Di conseguenza, concettualizziamo un indice di resilienza in grado di riflettere la duplice capacità delle imprese di assorbire attraverso la propria struttura interna gli shock derivanti dal contesto esterno e di trasferirli ai propri stakeholders interni ed esterni.

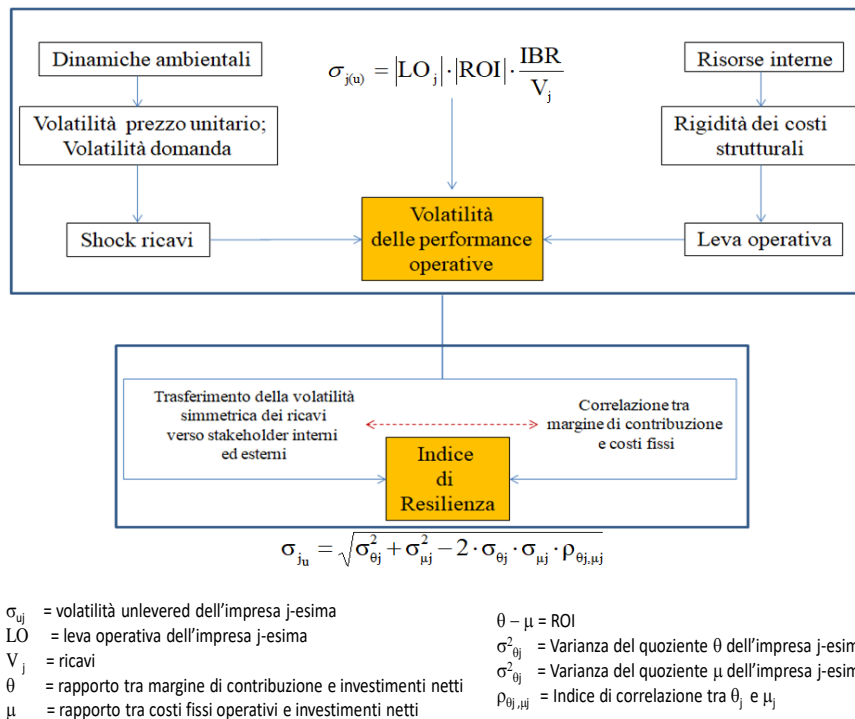
La Figura 2 riporta la concettualizzazione dell'indice di resilienza organizzativa. Da un punto di vista più strettamente operativo, riteniamo che l'indice di resilienza sia impattato in primo luogo da due driver ben distinti: le dinamiche ambientali e le risorse interne. Tali fattori agiscono sulla volatilità delle performance operative dell'impresa. L'intensità con cui shock dei ricavi si riflettono sulla volatilità di tali performance dipende in ultima istanza dall'interazione tra le due richiamate dimensioni. Nello specifico, le dinamiche ambientali determinano la volatilità del prezzo unitario e/o della domanda determinando shock positivi e/o negativi sui ricavi. L'intensità con cui tali shock impattano sulla volatilità dei risultati operativi dipende dal profilo strutturale dell'impresa. Infatti, al crescere dei costi fissi aumenta l'elasticità dell'EBIT rispetto alle fluttuazioni del mercato di sbocco (Renzi et al., 2017). Tale elasticità coincide con la leva operativa e rappresenta la componente endogena del rischio simmetrico (Renzi & Iandolo, 2017). A tale riguardo, occorre preliminarmente riferirsi alla letteratura finanziaria e distinguere tra rischio asimmetrico (o rischio puro) e simmetrico (o rischio speculativo; Deloach, 2000). Barile et al. (2022) affermano che il primo si riferisce "alla possibilità che l'attività oggetto di valutazione generi una redditività inferiore alle attese. In questa ottica, il rischio evidenzia un potenziale pericolo. Per rischio simmetrico, invece, si intende la dispersione positiva e negativa rispetto al rendimento atteso più probabile [...]. Per cui, mentre il rischio asimmetrico assume una valenza esclusivamente negativa, quello simmetrico emerge anche come opportunità, nel senso che la probabilità di subire perdite tende ad essere compensata dalla probabilità di ottenere risultati migliori rispetto alle attese" (p. 102).

L'indice di resilienza che proponiamo è dunque influenzato dall'associazione tra la volatilità delle performance operative (che si riflette nella correlazione tra il margine di contribuzione e i costi fissi) e il trasferimento della volatilità simmetrica dei ricavi verso stakeholders interni ed esterni. Le imprese resilienti sono in grado di modificare rapidamente la propria struttura interna o di trasferire il rischio agli stakeholders (o di operare in entrambi i modi). Più esplicitamente, le imprese possono trasformare la vulnerabilità indotta dall'effetto leva in resilienza riducendo o aumentando i costi fissi in caso di shock esterni e/o trasferendo la volatilità degli stessi shock mantenendo il margine di contribuzione costante. In prima analisi, la capacità dell'impresa di essere resiliente in termini di redditività operativa (ROI) trova una sintesi nella correlazione tra il margine di contribuzione e costi fissi entrambi parametrati agli investimenti netti. Detta correlazione (indicata in figura 2 come $\rho_{\theta\mu}$) – suscettibile di miglioramenti conseguenti ad approfondimenti teorici e verifiche empiriche – può essere assunta come generica proxy della resilienza d'impresa.

Diversamente dagli studi finora condotti in materia di resilienza, come anticipato, riteniamo che essa non si debba misurare soltanto in relazione alla capacità delle imprese di assorbire shock (ad es., Boin & van Eeten, 2013; Gimenez et al., 2017; Linnenluecke et al., 2012; McCann et al., 2009; Williams & Shepherd, 2016). A tale riguardo, argomentiamo che la citata correlazione $\rho_{\theta\mu}$, quale proxy della resilienza organizzativa, dipende sia dalla capacità di trasferire la volatilità simmetrica dei ricavi nei confronti di stakeholders interni ed esterni e successivamente dalla capacità di assorbimento degli shock attraverso la struttura interna (tipicamente facendo leva sui mezzi propri). Coerentemente con un'ampia letteratura in materia, riteniamo che tale comportamento sia dettato dall'obiettivo ultimo di mantenere un reddito stabile anche in periodi di shock. La letteratura si riferisce alle strategie di livellamento del reddito con la terminologia di "income smoothing", definendolo un obiettivo aziendale a cui l'azione manageriale deve informarsi (ad es., Gordon, 1964; Beidleman, 1973; Graham et al., 2005). La finalità di salvaguardia del potere di acquisto dell'azionista attraverso una sorta di immunizzazione del reddito rispetto alla volatilità della domanda e/o dei prezzi implica il parziale trasferimento di tale volatilità alla più ampia rete di stakeholders di cui l'impresa fa parte. Da alcuni recenti sviluppi empirici condotti dagli Autori e non ancora conclusosi, è emerso che l'impresa trasferisce la varianza trasversale delle vendite ai propri stakeholder interni ed esterni, mantenendo al contempo un reddito stabile e proteggendo così la ricchezza degli azionisti. Tale trasferimento si realizzerebbe attraverso dei canali di livellamento del reddito (che abbiamo definito "risk smoothing channels") la cui utilizzabilità e manovrabilità ipotizziamo che dovrebbe dipendere da aspetti oggettivi e soggettivi. Gli aspetti oggettivi si riferiscono alla flessibilità dei contratti in essere che legano gli stakeholders all'impresa, mentre quelli soggettivi alle aspettative in termini di rischio-rendimento degli stakeholders stessi rispetto all'attività dell'impresa. Distinguendo ulteriormente tra il segno degli shock (positivi o negativi) e il tipo (persistenti o transitori), ci proponiamo di esaminare l'ordine di utilizzabilità dei canali e la simmetria nelle dinamiche di condivisione della volatilità associata agli shock.

In definitiva, l'indice di resilienza proposto dipende dalla duplice capacità delle imprese di assorbire internamente gli shock derivanti dal contesto esterno e di trasferirli ai propri stakeholders interni ed esterni. Tale elaborazione, sebbene applicabile a qualsiasi tipologia di impresa, risulta ancor più idonea a spiegare la resilienza delle PMI. Le PMI risultano infatti strutturalmente più esposte agli shock. Tuttavia, non escludiamo che possano esistere PMI molto resilienti in relazione al network di stakeholders di cui fanno parte e specialmente ai rapporti con i rispettivi fornitori.

Figura 2. Framework teorico di riferimento per la definizione dell'indice di resilienza.



Fonte: Elaborazione degli Autori.

Limiti della ricerca. *Il presente studio non è esente da limitazioni. In primo luogo, la ricerca della letteratura è stata condotta utilizzando il database Scopus di Elsevier. Sebbene sia incluso tra i database più completi e influenti nelle discipline economiche e manageriali, alcune pubblicazioni potrebbero non essere indicizzate all'interno dello stesso. Peraltro, trattandosi di un database costantemente aggiornato, un'analisi bibliometrica relativa a un argomento emergente può essere soggetta a variazioni sostanziali in alcuni anni. Tuttavia, tali limitazioni non influiscono sulla valutazione generale dell'attuale territorio intellettuale e delle sue implicazioni per le future aree di ricerca.*

In secondo luogo, la proxy di indice di resilienza proposta rappresenta una prima misura di resilienza che necessita di successivi sviluppi teorici ed empirici.

Implicazioni manageriali. *Il lavoro si presta a molteplici implicazioni manageriali. Essendo la dimensione aziendale determinante rispetto agli shock esterni, il presente lavoro presenta potenzialità manageriali soprattutto nell'ambito delle PMI. L'indice può servire come strumento per il management al fine di misurare la resilienza delle PMI a shock esterni sia proattivamente (prima che lo shock si verifichi) che reattivamente (dopo che lo shock si è verificato).*

Inoltre, il paper offre diverse opportunità di ricerca future e implicazioni per accademici e manager. La comprensione dei canali di trasferimento del rischio al livello dell'impresa è un prerequisito fondamentale per adempiere alle funzioni proprie della corporate governance di monitoraggio e valutazione dei rischi. Tale approccio può consentire di gestire le relazioni con i fornitori in modo più sostenibile e duraturo. Questa analisi può anche servire a capire esplicitamente in che misura il rischio di alcuni stakeholder (tipicamente i fornitori) sia simile a quello normalmente attribuito a un investitore finanziario. Questa estensione potrebbe avere diverse prospettive accademiche e manageriali, come quelle nel campo del costo del capitale legato alle relazioni business-to-business. Un'ulteriore possibile estensione di questo lavoro potrebbe riguardare la relazione tra i processi di trasferimento del rischio e il rischio sistemico all'interno delle filiere.

Originalità del paper. *Il paper si colloca nell'ambito degli studi economico-manageriali sulla resilienza organizzativa come uno dei primissimi tentativi di operationalizzazione di tale concetto, al momento poco studiato da un punto di vista empirico e pratico. Il presente studio contribuisce alla letteratura in materia di resilienza organizzativa in diversi modi.*

In primo luogo, estendendo la letteratura esistente, argomentiamo che la resilienza non dipende solamente dalla capacità di assorbimento degli shock (Boin & van Eeten, 2013; Gimenez et al., 2017; Linnenluecke et al., 2012; McCann et al., 2009; Williams & Shepherd, 2016), ma anche dalla capacità delle imprese di trasferire la volatilità di detti shock alla rete di stakeholders interni ed esterni di cui fa parte.

In secondo luogo, come evidenziato da influenti review sul tema (Linnenluecke, 2017; Hillmann & Guenther, 2021), la misurazione della resilienza organizzativa è una delle traiettorie che restano da percorrere per la ricerca futura. A tale riguardo, lo studio contribuisce a detto filone di studi concettualizzando un indice di resilienza testabile empiricamente.

Infine, lo studio contribuisce agli studi in materia di rischio e accounting esaminando, attraverso l'implementazione dell'indice, il trasferimento del rischio a livello dell'impresa nei confronti degli stakeholders interni ed esterni.

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La diversità di genere nella forza lavoro come antecedente della resilienza d'impresa: evidenze preliminari da un caso studio

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Abstract

Nel corso dell'ultimo decennio, si è osservato un impegno crescente delle multinazionali nella promozione della parità di genere. Sempre più frequentemente, le multinazionali formulano politiche che includono opportunità di formazione e mentorship per le donne e collaborano con istituzioni pubbliche e organizzazioni private in iniziative volte a favorire le carriere professionali femminili. Tali sforzi sono di particolare rilievo poiché la diversità di genere nella forza lavoro può svolgere un ruolo fondamentale nel promuovere la resilienza all'interno delle strutture organizzative delle imprese multinazionali. Assumendo la prospettiva teorica dell'institutional work, questo studio – ancora in fieri - si propone di esaminare le azioni intraprese dalle multinazionali nel promuovere la diversità di genere nella forza lavoro e investigare i potenziali benefici derivanti da tali sforzi sulla resilienza organizzativa. La nostra analisi qualitativa del caso di Procter & Gamble mostra che la multinazionale si impegna in forme di practice work e boundary work per favorire la diversità di genere nella forza lavoro che, a sua volta, origina potenziali vantaggi in termini di resilienza. Questo studio contribuisce alla ricerca di international business fornendo chiarezza sull'approccio istituzionale adottato dalle multinazionali che, operando in molteplici contesti istituzionali e servendosi di collaborazioni con attori pubblici e privati, promuovono la parità di genere non solo sul luogo di lavoro, ma anche al di fuori di esso. Inoltre, approfondisce la comprensione della resilienza organizzativa esaminando gli effetti positivi della diversità di genere nel rafforzare la resilienza delle multinazionali.

Parole chiave: Diversità di genere, resilienza, imprese multinazionali, lavoro istituzionale

Inquadramento della ricerca. *La parità di genere e i principi ad essa connessi rappresentano potenti motori di cambiamento organizzativo per una parte significativa del mondo aziendale, come richiesto dall'Agenda 2030 e dai suoi "Sustainable Development Goals" (SDGs; ad esempio, SDG 5 "Parità di Genere" e SDG 10 "Riduzione delle Disuguaglianze"). In tale quadro si inserisce l'interesse per le multinazionali che mostrano capacità concreta di influenzare i contesti istituzionali in cui operano. Grazie al loro ampio raggio d'azione e alla loro presenza globale, le multinazionali sono in grado di diffondere norme sulla parità di genere per contrastare la discriminazione di genere in molteplici contesti istituzionali. Inoltre, le multinazionali intraprendono iniziative volte ad eliminare gli ostacoli all'istruzione e alle opportunità economiche per le donne attraverso pratiche e politiche aziendali. Nel farlo, collaborano con molteplici attori, privati e pubblici, attraverso iniziative che sostengono l'istruzione delle donne, la salute e il loro empowerment economico, implementano pratiche volte a includere le imprese di proprietà femminile nelle loro catene di approvvigionamento, e offrono opportunità di tutoraggio e formazione per le donne al fine di farle avanzare in ruoli di leadership all'interno delle loro organizzazioni. Per raggiungere tali obiettivi, le multinazionali combinano e ricombinano risorse, conoscenze e capacità con i loro partner, svolgendo così un'attività istituzionale, influenzandone gli assetti dei paesi in cui operano (Zietsma & Lawrence, 2010).*

Sebbene sia facile riconoscere che tali sforzi da parte delle multinazionali migliorino il loro benessere organizzativo e, su scala più ampia, contribuiscano all'avanzamento del benessere globale e alla promozione di comunità migliori, l'effetto che gli ambienti lavorativi caratterizzati da parità di genere possono avere sulla resilienza organizzativa sembra non essere immediatamente intellegibile (Kim, Jeong, You, & Moon, 2021). Attraverso la coltivazione di ambienti inclusivi ed equi, le multinazionali favoriscono un'atmosfera in cui i dipendenti possono realizzare appieno il loro potenziale e sfruttare la loro esperienza in modi innovativi, rafforzando così la resilienza dell'organizzazione (EY, 2021; Forbes, 2022; Ray, Baker, & Plowman, 2011). Inoltre, le iniziative volte ad emancipare le donne all'interno dei luoghi di lavoro delle multinazionali introducono una diversità di prospettive nei processi decisionali che arricchisce le capacità

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di risoluzione dei problemi e contribuisce, di conseguenza, alla resilienza organizzativa (Conz & Magnani, 2020; De Dreu & West, 2001).

Obiettivo del paper. Questa ricerca mira ad approfondire come le multinazionali favoriscano la diversità di genere nella forza lavoro e l'impatto che ciò può avere sulla resilienza organizzativa. Facendo leva sulla prospettiva teorica di institutional work (da ora in poi "lavoro istituzionale"; Lawrence, Suddaby & Leca, 2009; Zietsma & Lawrence, 2010), conduciamo un caso studio su Procter & Gamble (P&G) per indagare sui suoi sforzi nel promuovere l'uguaglianza di genere all'interno delle carriere scientifiche, tecnologiche, ingegneristiche e matematiche (STEM), e analizziamo come tali iniziative vengano intraprese attraverso un'attività istituzionale svolta dalla multinazionale e l'effetto che le stesse hanno sulla capacità di resilienza dell'impresa.

Metodologia. In questo studio, effettuiamo un esame qualitativo di un caso studio (Langley & Abdallah, 2011), offrendo una descrizione dettagliata e una comprensione approfondita che sarebbe difficile ottenere attraverso campioni estesi (Golden-Biddle & Locke, 1993).

Indaghiamo il caso di P&G poiché si rivela un caso studio ideale per varie ragioni. In primo luogo, P&G è considerata la più grande azienda di beni di consumo al mondo. La sua presenza globale offre la possibilità di esaminare una vasta gamma di iniziative che coinvolgono molteplici attori che operano in contesti istituzionali diversi, consentendo un'analisi di come il lavoro istituzionale per l'empowerment delle donne nelle discipline STEM si manifesti e quali attori siano coinvolti.

In secondo luogo, P&G dimostra un forte impegno nei confronti dell'Agenda 2030 e dei suoi SDG relativi alla parità di genere (Epstein, Buhovac, & Yuthas, 2015; sito web di P&G). In particolare, P&G mostra un impegno duraturo nel creare una forza lavoro paritaria (The Guardian, 2013; USA Today Money, 2015). Le sue statistiche rivelano che il 41% dei dipendenti sono donne e il Consiglio di amministrazione è costituito dal 45% di donne (Rapporto sulla cittadinanza di P&G, 2022). Ciò permette agli autori di approfondire le strategie di genere dell'azienda relative all'empowerment delle donne, esplorando come P&G esegua un lavoro istituzionale per raggiungere gli SDG relativi alla parità di genere ed allinearsi ad obiettivi socialmente più ampi.

Infine, la disponibilità di informazioni è cruciale per guidare la decisione sulla selezione del caso e stabilisce i prerequisiti per condurre un caso ricco di informazioni (Locke, 2000; Patton, 1990). L'impegno di P&G a fornire relazioni trasparenti sugli sforzi correlati al genere è iniziato con il suo primo rapporto di sostenibilità pubblicato nel 1999, consentendo agli autori di accedere a dati completi e affidabili. Questa trasparenza è fondamentale per un'analisi basata sull'evidenza.

Per esaminare il caso di P&G, è stata raccolta un'ampia gamma di dati primari e secondari. Inizialmente, abbiamo raccolto i rapporti annuali sulla sostenibilità e sulla cittadinanza accessibili sul sito web di P&G e materiali accessibili sul sito web "P&G good everyday", costituendo la nostra fonte principale di informazioni. Inoltre, abbiamo raccolto varie interviste, video e talk disponibili sul canale YouTube che chiariscono l'approccio dell'impresa multinazionale alle iniziative di parità di genere. Successivamente, abbiamo utilizzato diverse fonti secondarie, tra cui articoli online riguardanti P&G e i suoi sforzi in materia di parità di genere, come riportato sui principali giornali (ad esempio, Financial Times).

Abbiamo focalizzato la raccolta dei dati sulle iniziative intraprese da P&G volte a promuovere la parità di genere nelle carriere STEM, con particolare attenzione a quelle progettate per l'empowerment delle donne. Si prega di guardare la Tabella 1 per un maggiore dettaglio sui dati raccolti.

Data sources	Data
Report di P&G	P&G Sustainability Reports dal 1999 al 2015 P&G Corporate Citizenship Reports dal 2016 al 2022
Pubblicazioni-P&G good everyday	Gender Equality: The Inspiring Voices of P&G Women Leaders (Gennaio 2024) Leading in Gender Equality: The History of Women and P&G (Giugno 2020) Rewriting What It Means to Play "Like a Girl" (Gennaio 2020)
Interviste e talk con membri di P&G raccolte su YouTube	1 intervista con Vincent Barnes P&G Global Tesco Vice President & Gender Quality Sponsor 1 intervista con Gerealdine Huse - P&G Global Tesco Account Vice-President 1 intervista con M. Suran Suranjan - P&G Asia, Middle East and Africa President 2 interviste con Carolyn Tastad - Group President, North America for P&G 1 intervista con Deanna Bass - P&G Director of Global Diversity and Inclusion 1 talk di Jeremy Hook - P&G Vice-President Product and Package Innovation 1 talk di Karl Preissner - P&G Global Diversity and Inclusion HR Leader 1 talk di Lauren Thaman - Senior Director of Communications P&G Ventures 1 talk di Tara Hogan-Charles - P&G Associate Director, Global Relations & Public Policy
Studi su P&G	(Epstein, Buhovac, & Yuthas, 2015)
Articoli di giornale	Responding to the great resignation with empathy (Financial Times, Gennaio 2023) The business case for women in leadership (Forbes, Marzo 2022) How a people-empowering culture helped P&G pull through the pandemic (EY, Gennaio 2021) Reverse mentoring: what young women can teach the old guard (Financial Times, Marzo 2019) Female CEO at P&G? 'Just a matter of time' (USA Today Money, Settembre 2015) Will we ever have more women at the top? (The Guardian, Maggio 2013)
Website	P&G website; Financial Times website; The Guardian website; United Nations website; EY website; Wikipedia website; CECH website; National Center for Science and Engineering Statistics website; OLAY website.

Risultati. Solo il 27% delle donne considera una carriera nel settore tecnologico rispetto al 62% degli uomini. E solo il 3% delle donne sceglierebbe la tecnologia come prima scelta rispetto al 15% degli uomini! (trad. nostra, sito P&G, Dicembre 2021)

P&G si affida a una forza lavoro STEM composta da ingegneri, scienziati, specialisti IT e innovatori e sta attivamente cercando di trasformare queste statistiche. Con un particolare focus sulle discipline STEM, P&G aspira ad avanzare nell'innovazione centrata sulla tecnologia coinvolgendo in modo equo donne e uomini nella sua forza lavoro. Questo progetto, oltre ad avere significative implicazioni sociali, è intrinsecamente connesso alla strategia della multinazionale. I professionisti STEM e le loro competenze possono essere di primaria importanza per il successo e la competitività delle imprese (The Guardian, 2014). Le competenze STEM guidano l'innovazione ed abilitano le imprese ad affrontare efficacemente problemi complessi e trovare soluzioni creative (Grimpe, Sofka, & Kaiser, 2023). Nel mercato altamente competitivo di oggi, l'innovazione è fondamentale per restare al passo con i tempi e soddisfare le esigenze e le richieste mutevoli dei consumatori. Da un lato, le competenze STEM forniscono alle multinazionali l'esperienza e la conoscenza necessarie per sviluppare nuovi prodotti, servizi e processi che possono creare nuove opportunità di mercato e promuovere il miglioramento continuo e la crescita. Dall'altro, i professionisti STEM sono addestrati ad analizzare criticamente i problemi, decomporli in componenti gestibili e ideare soluzioni innovative che affrontano le cause profonde anziché solo i sintomi. Questo approccio alla risoluzione dei problemi è prezioso per le multinazionali che affrontano mercati dinamici e cercano di superare sfide impreviste (Tippmann, Scott, & Mangematin, 2012).

Il fenomeno dell'ineguaglianza di genere nelle carriere STEM merita particolare attenzione (Financial Times, 2018). Secondo il National Center for Science and Engineering Statistics, fino al 2021, il 65% delle persone impiegate nelle professioni STEM negli Stati Uniti sono uomini, mentre le donne costituiscono solo il 35%. Le ragioni che spiegano la debole presenza delle donne nelle discipline STEM sono molteplici e risiedono in stereotipi sociali, percezioni errate o ambienti educativi che incentivano in modo inefficiente le discipline STEM (Correll, 2004; Wang & Degol, 2017). Le disparità nelle opportunità educative aggravano ulteriormente il divario di genere nelle discipline STEM. Ragazze e donne possono incontrare ostacoli sistemici nell'accesso ad un'educazione STEM di qualità, tra cui il limitato accesso a risorse e competenze a queste connesse e la mancanza di incoraggiamento da parte di educatori e tutor. Ancora, sul posto di lavoro, le donne nelle carriere STEM spesso affrontano sfide legate alla discriminazione e ad una cultura dominata dagli uomini. La sottorappresentazione di modelli femminili nelle discipline STEM può ostacolare la fiducia delle donne nel perseguire tali carriere, così come la mancanza di diversità di genere in posizioni di leadership e ruoli decisionali ne perpetua le barriere già esistenti.

Sapendo che non c'erano molte donne nelle professioni STEM sono stata motivata da quella sfida a diventare una di quelle donne in modo che io possa aiutare altre donne. (trad. nostra, Rolanda Wilkerson, Olay Science Communications Fellow)

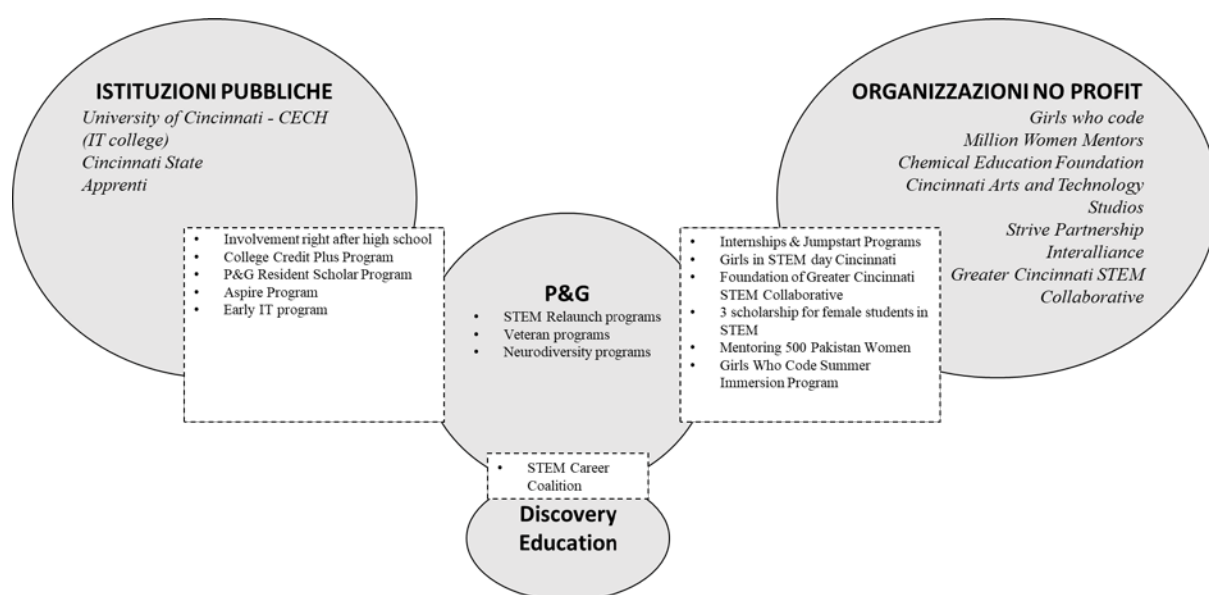
L'empowerment delle donne nelle discipline STEM da parte di P&G si traduce nella coltivazione di una diversità di genere nella sua forza lavoro. La diversità in termini di genere favorisce una ricca varietà di prospettive e idee che, a loro volta, aumentano l'innovazione e la creatività nei processi decisionali, contribuendo positivamente alla risoluzione dei problemi (Kim et al., 2021). Uomini e donne possiedono distinti insiemi di competenze, conoscenze e prospettive che portano nel luogo di lavoro dell'organizzazione, così come i loro comportamenti di genere (Akinola, Martin, & Phillips, 2017). Ad esempio, la ricerca esistente afferma che le donne tendono ad avere una maggiore attenzione ai dettagli (Stendardi, Graham, & O'Reilly, 2006) e un livello più alto di avversione al rischio rispetto ai loro colleghi maschi (Graham, Stendardi, Myers, & Graham, 2002). Tuttavia, le donne nella forza lavoro sono comunemente percepite come incarnanti caratteristiche di cooperazione, empatia e attenzione agli altri (Boulouta, 2013; Financial Times, 2023; Kacmar et al. 2011; Leslie, Snyder, & Glomb, 2013). Al contrario, gli uomini sul posto di lavoro sono usualmente riconosciuti per possedere tratti caratterizzati da un senso di agenzia, indipendenza e una propensione proattiva ad agire (Akinola et al. 2017). La rilevanza della diversità di genere nella forza lavoro si riversa nella costituzione di team di lavoro diversificati dal punto di vista del genere, capaci di mostrare migliori capacità nell'affrontare sfide complesse e formulare soluzioni creative attraverso l'utilizzo di prospettive diverse (De Dreu & West, 2001). Di conseguenza, i team di lavoro, composti da individui di diverso genere e con competenze ed esperienze differenti, dimostrano una maggiore abilità nel navigare e gestire situazioni di incertezza, mettendo in evidenza i vantaggi tangibili che la diversità di genere offre durante i momenti di crisi. Questo diventa particolarmente necessario in circostanze impreviste in cui i team di lavoro sono costretti ad affrontare compiti non routinari e la resilienza organizzativa è messa alla prova. Jeremy Hook, Vicepresidente Product and Package Innovation presso P&G, descrive cosa è accaduto quando, durante una delle prime notti di COVID-19, un ospedale ha chiesto aiuto alla multinazionale.

Così rapidamente, quella notte, abbiamo riunito due o tre persone e abbiamo iniziato a fare brainstorming. Siamo passati da una chiamata fredda di un ospedale che ci chiedeva di progettare un prototipo entro pochi giorni, alla finalizzazione del progetto entro il quinto giorno, alla produzione entro il nono giorno e alla prima spedizione entro il quattordicesimo giorno. Alla fine, abbiamo prodotto e donato con successo 1,5 milioni di schermi facciali in un brevissimo periodo di sei settimane. Riguardo al corso di laurea in STEM, l'attenzione principale è sulla formazione di scienziati e ingegneri capaci di risolvere problemi e portare la creatività in primo piano. Tuttavia, si apprende anche che gran parte di ciò che si fa non è un contributo individuale, ma parte di un più ampio sforzo di squadra. Creare un prodotto come questo richiede una molteplicità di discipline e competenze, che vanno dal legale e dall'assicurazione della qualità

all'ingegneria meccanica e chimica, tra le altre. (trad. nostra, Jeremy Hook, Vice Presidente Product and Package Innovation presso P&G).

In tali situazioni, i team si impegnano nella deliberazione, valutando potenziali alternative per affrontare le sfide in questione e partecipando attivamente a momenti di dibattito e analisi comparativa. Le diverse prospettive (ad esempio, relative al genere; Kim et al., 2021) all'interno dei team di lavoro durante queste discussioni (o talvolta il conflitto derivante dalla diversità; De Dreu & Weingart, 2003), hanno il potenziale di facilitare l'apprendimento e generare idee innovative e altamente creative, cruciali per affrontare eventi imprevisti. Di conseguenza, questa dinamica contribuisce ad avanzare l'efficacia del gruppo e a coltivare l'adattabilità e la flessibilità della multinazionale, contribuendo alla sua resilienza. P&G riconosce i vantaggi di fare affidamento su una forza lavoro altamente competente in STEM e la necessità di contrastare l'attuale disuguaglianza di genere nell'accesso alle relative carriere. Infatti, la multinazionale ha dimostrato un impegno specifico nell'empowerment delle donne nelle carriere STEM, conducendo specifiche configurazioni di lavoro istituzionale: "practice work", ovvero creare nuove pratiche per favorire la diversità di genere nella forza lavoro STEM, e "boundary work", ovvero creare nuovi confini esemplificati da iniziative come la "STEM Career Coalition". Questi, a loro volta, consentono a P&G di costruire team di lavoro bilanciati dal punto di vista del genere che mostrano effetti positivi sulla sua resilienza (Geraldine Huse, Vicepresidente Global Tesco Account di P&G). Risultati preliminari su tali configurazioni di lavoro istituzionale sono rappresentate nella Figura 1.

Figura 1: P&G e le sue partnership creano nuove pratiche e confini (rispettivamente conducono forme di practice work e boundary work) per promuovere la diversità di genere nelle STEM.



Limiti della ricerca. Come tutte le ricerche, in generale, e quelle in fieri, in particolare, anche questo scritto presenta delle limitazioni. In primo luogo, abbiamo raccolto informazioni da fonti disponibili su web, mentre la ricerca "on field" potrebbe fornire informazioni specifiche del contesto più dettagliate che consentirebbero di acquisire una comprensione più approfondita del fenomeno. Nonostante questo possa essere il metodo più appropriato per eseguire un caso studio, tale via non è sempre perseguibile per la difficoltà di accesso ai dati.

In secondo luogo, mentre in questo scritto proponiamo un esame qualitativo delle azioni formulate da una multinazionale per promuovere la parità di genere sul posto di lavoro ed esploriamo le implicazioni potenziali di questi sforzi sulla resilienza organizzativa, è altresì d'interesse corroborare ed estendere la validità della nostra argomentazione attraverso metodologie di ricerca quantitative. In particolare, si ritiene opportuno invitare gli studiosi ad esplorare le condizioni sotto le quali esiste una relazione tra la diversità di genere nella forza lavoro e la resilienza organizzativa e identificare eventuali variabili di moderazione. Le multinazionali e altre organizzazioni potrebbero sfruttare le iniziative di parità di genere come strumento strategico per costruire la resilienza in un ambiente aziendale sempre più complesso e dinamico.

Infine, il nostro caso studio fornisce una comprensione notevole di come una delle più grandi e rinomate multinazionali sia attivamente coinvolta negli sforzi di parità di genere. Tuttavia, la nostra ricerca potrebbe essere ampliata comparando altre multinazionali, anche appartenenti a settori diversi, e le loro strategie di diversità di genere, valutandone gli effetti in termini di resilienza.

Implicazioni pratiche. Le implicazioni pratiche di questo studio per i manager delle imprese multinazionali possono essere molteplici. In primo luogo, i manager dovrebbero concentrarsi sull'investimento in iniziative che promuovono attivamente lo sviluppo professionale femminile, integrandolo nei piani strategici aziendali e nelle pratiche quotidiane al fine di favorire la diversità di genere come fonte di resilienza. Questo permetterebbe alle imprese multinazionali di affrontare eventi inaspettati nei contesti istituzionali in cui operano, contribuendo così a migliorare la resilienza delle loro organizzazioni in un contesto globale sempre più complesso. In secondo luogo, questo studio suggerisce ai manager

di considerare l'importanza delle collaborazioni con enti pubblici e organizzazioni private per creare un impatto più significativo sul tessuto istituzionale, promuovendo principi di parità di genere. L'interazione con tali entità può consentire alle imprese multinazionali di accedere a risorse aggiuntive e di costruire partenariati strategici che favoriscano un cambiamento culturale più ampio e duraturo. Inoltre, attraverso queste collaborazioni, le imprese possono contribuire a modellare le politiche e le normative in materia di parità di genere a livello locale e globale, contribuendo così a creare un ambiente sociale e lavorativo più inclusivo ed equo.

Originalità del paper. In nuce, questo studio offre due principali contributi. In primo luogo, contribuiamo agli studi di international business esplorando la prospettiva teorica del lavoro istituzionale come un'area di ricerca promettente per sviluppare una conoscenza più ampia dell'azione delle multinazionali sugli assetti istituzionali nei paesi in cui operano. In particolare, forniamo un'analisi su come le multinazionali conducano il lavoro istituzionale per promuovere la parità di genere e sviluppare contesti lavorativi e società più eque. Questo evoca il ruolo delle multinazionali come "bridging institutional entrepreneurs" (Leone et al., 2023) che, collaborando con diversi attori e spaziando in vari contesti istituzionali, supportano le istituzioni verso il raggiungimento di obiettivi di sostenibilità. In tal modo, non solo offriamo preziosi approfondimenti sul più ampio tema del contributo delle multinazionali allo sviluppo sostenibile, ma esaminiamo anche in modo approfondito un insieme di SDG relativi alla parità di genere nell'istruzione e sul posto di lavoro.

In secondo luogo, estendiamo gli studi sulla resilienza organizzativa poiché sembra che la letteratura esistente non abbia ancora realizzato pienamente il potenziale della diversità di genere nella forza lavoro come fonte di resilienza organizzativa per le multinazionali. Quest'ultime possano trarre beneficio dalla costruzione di una forza lavoro che comprenda equamente dipendenti di diverso genere, ognuno capace di apportare caratteristiche e prospettive uniche sul posto di lavoro. Questa diversità ha il potenziale di rinforzare la resilienza organizzativa promuovendo l'innovazione, migliorando le capacità di risoluzione dei problemi e aumentando l'adattabilità alle dinamiche di mercato mutevoli e ai bisogni della società. Pertanto, comprendere e sfruttare i vantaggi della diversità di genere può essere fondamentale nel rafforzare la resilienza delle multinazionali in un panorama che Jamais Cascio definisce BANI (acronimo di Brittle, Anxious, Nonlinear, and Incomprehensible)

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Track 17
**Perspectives on grand challenges in international
business and implications for companies**
Special Track

“Made by”: the evolution of the Country-of-Origin Effect to businesses and firms

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Abstract

The research is framed into the literature of the “country-of-origin effect”, otherwise known as “made in”, which is a wide and multidisciplinary stream of business economics and management studies.

The “country of origin effect” (COE) refers to how consumers’ perceptions and attitudes towards products can be significantly influenced by the country from which goods are originated. Existing research into COE has explored the relationship between a country’s image, the type of products, and consumers’ cultural backgrounds, indicating that these factors can profoundly affect purchasing decisions. The concept also encompasses emotional responses, suggesting that COE might not only influence cognitive evaluations but also how consumer feels about products from certain countries (i.e. Germany, Japan, China, Italy, etc.).

While the “made in” phenomenon has been widely explored with reference to a number of products and industries involved, what is still poorly investigated is the made in effect with regard to services. Current literature on COE of services focuses on consumer perceptions mainly and underlines issues related to the propensity to trust services provided by foreign firms. However, we know that services allow firms to create and capture value, as for their uniqueness and customizability. Based on the above, this paper investigates the COE of services in order to disentangle the main features of firms and their value proposition, underlying the creation of such effects.

As a result, the paper proposes a conceptual framework, which includes the antecedents of the COE of service, which attain to the firms that provide a value proposition based on services and include, for instance, customization of value proposition and the role of persons. Moreover, the research offers a conceptual contribution introducing the concept of “made by” in the business economics and management studies, thus expanding the boundaries of the concept of COE. The “made by” concept is aligned with current trends which embrace a more customized approach to firms’ production driven by customer demand in production systems that prioritize customization, where technology, product life cycles, and a more sustainable and ethical approach, where who is making the product and how it’s being made become as important as the product itself.

Key words: country of origin effect; made in; made by; value proposition; service.

Framing of the research. *The research is framed into the existing and long-lasting literature of the “country-of-origin effect” COE, which is a multidisciplinary stream of business economics and management driven by international business, firms and territorial marketing, and strategic management studies. It can determine important repercussions on the international competitiveness of products and businesses in a certain territory (Bertoli, Resciniti, 2013; Moon, Oh, 2017; Roth, Romeo, 1992; Sharma, 2011; Suh et al., 2016; Tan, Meyer, 2011).*

This phenomenon is largely communicated through the “made in” label that evokes various associations and expectations in consumer’s minds regarding product quality, reliability, and other attributes. The term “made in” indeed can signal quality, authenticity, and origin appealing to consumers’ preferences and values. However, its significance can fluctuate, as it might convey prestige and craftsmanship in one context, yet potentially evoke concerns about labor practices, environmental impact or product quality in another. This duality underscores the complexity of global consumer culture, where the interpretation of buzzwords like “made in” can be molded by narratives, economic factors, and personal belief.

In detail, COE refers to potential actors’ attitudes towards the country where a particular offer originates (Durand, 2016; Verlegh, Steenkamp, 1999). Some authors have considered as country of origin the territory that a consumer associates with a particular product or brand, regardless of where the product is actually produced (Eng et al., 2016; Jaffe, Nebenzahl, 2006; Koschate-Fischer et al., 2012). Sauer et al. (1999) differentiate between the country of design

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and the country of production or assembly of a product, and hypothesize how the interaction between these two elements affects consumers' attitudes towards the product brand.

When evaluating products for purchase, the country's image (Aaker, 1996; Girard et al., 2017; Vomberg et al., 2015) can significantly impact consumer evaluations of purchase (Fetscherin, Toncar, 2010; Hamzaoui, Merunka, 2007). Indeed, previous studies have shown that consumers tend to have a more favorable evaluation for brands that originate from economically developed countries (i.e. Batra et al., 2000, Sharma, 2011).

Other studies have explored the factors that contribute to the creation of "made in" effect, such as the characteristics of the territory, local culture, specific product qualities (Ahmed, D'Astous, 2008; Foroudi et al., 2016; Gürhan-Canli, Suh et al., 2016).

However, a review of the literature on COE reveals that while numerous studies have been conducted to understand the impact of this phenomenon on product perceptions (i.e. Jaffe, Nebenzahl, 2006; Koschate-Fischer et al., 2012; Hamzaoui, Merunka, 2007), only a limited research has examined COE in a service context. This is even though services are critical to the economies of all nations (Santos 2022; Samie, 2023).

Differences in the country of the service provider may be difficult to cover up due to service characteristics such as intangibility, perishability, heterogeneity, and inseparability (Berry et al., 1985). Therefore, the nature of services makes them less susceptible to typical effects that impact customers' evaluation of tangible products.

The reasons identified in the literature relate to the difficulty of conveying information to respondents using traditional marketing research techniques, the implicit assumption that product-related COE findings can be easily extended to any context, and the belief that purchase decisions based on product colour, style, size, feel and/or fit cannot be replicated with services (Samie, 2023).

As highlighted by Javalgi and colleagues (2001), various scholars focus on the sub-branch of COE study, which is named as Country of Service Origin (COSO), to analyze the opinion held by domestic consumers of the service associated with a specific country and the ability of service providers to provide a quality service experience (Thelen et al., 2010).

The impact of COE on the purchase decision changes according to the type of service being purchased. For instance, Pecotich et al. (1996) demonstrated that banking is impacted by COO and ethnocentrism. Bose and Ponnampalnam (2011) reported that consumers are more likely to choose movies and music from countries historically connected to India due to CO influence. Additionally, studies on medical services have shown that associated nationalities do play a role in provider selection (Harrison-Walker, 1995). In the field of international education, the preference of service providers has been linked to the COE, with students prioritising the host country of their university before choosing an institution (Morrish, Lee, 2011; Bourke, 2000).

These differences could be explained by the risk associated with each category of service. Berentzen et al. (2008) suggested that additional information is needed to induce purchase intention when the perceived risk of the service is higher. Indeed, communication, security and reliability are the most important service quality attributes for consumers when receiving an off-shored service (Thelen et al 2010). Some studies have found that consumers' positive beliefs about the foreign industry are closely related to their satisfaction levels, which vary with location information in the case of a lesser-known service provider (Santos 2022). This result can be explained by the fact that both COSO and the type of information exchanged influence service sentiment (Lu et al., 2020). Furthermore, in the case of a risky service, additional service quality may not be able to compensate for a negative COE (Berentzen, et al., 2008).

This brief analysis of the literature on COE applied to services reveals that most studies focused on consumers' perceptions and attitudes towards services, purchasing behaviour, reactions, and sentiment towards services offshoring. Previous literature pays very little attention to the service provider point of view. In this vein, for example, Ferguson et al. (2008) analysed the strategic dilemma of American service providers with the positioning of their service offerings in other cultures, while Lu and colleagues (2019) claim that companies ought to select partners situated in countries with comparable cultural values and backgrounds to reduce the perceived risk. Moreover, several studies show a limited propensity of consumers to trust foreign service providers and their value proposition. This attitude could be due to the fact that, while it is easier for to recognize and appreciate value of foreign products, since they are made according to production methods, materials and technologies that can be better known and are somehow standardized, this could be more difficult for services. In fact, services are by definition intangible, not completely standardizable and their quality and value are related to the skills, competences, attitudes of those persons who provide the service.

Purpose of the paper. In the light of the above, the paper deals with the following research problem: since COE has different meanings in different contexts, how is it possible to extend its conceptual domain that is traditionally referred mainly to firms operating in mature businesses driven by technical processes (i.e. agriculture and manufacturing)? Is the COE more comprehensively extendable also to a broad spectrum of service businesses where, even if the outputs are intangibles, the "made in" label is more related to the culture, the lifestyle, the creativity, the entrepreneurial spirit of the business leaders and individuals of a nation?

In order to answer our research question, this research analyses the phenomenon of the "made in" mainly from the service provider's perspective rather than from the consumer's point of view, in order to enrich the literature on this topic.

We believe it is particularly important, on one hand, to identify the elements underlying the COE applied to services, in other words the element that stimulate the "made in" effect for consumers; and on the other hand, understand what firms can do in order to unleash this effect by appropriately designing their value proposition. Indeed, value proposition can be understood as the statements of benefits that are delivered by the firm to its customers (Osterwalder, Pigneur,

2010). It helps organizations to relate with their customers and therefore it serves as one of multiple steps in service design and value creation (Chandler, Lusch, 2015; Pawar et al., 2009).

In particular, we aim to create a comprehensive theoretical construct of the phenomenon, as up to now, it is missing in the literature, how service firms could design their value proposition to improve the perceived value and trustworthiness of their offer. Moreover, the research aims to provide a framework including the main attributes to characterize the value proposition of service firms, in order to make it attractive.

Methodology. To examine the country of origin effect in the service context, we utilized a qualitative research approach, specifically the single case study. This methodology is appropriate as it provides insights that facilitate the understanding of different aspects observed while still attempting to produce generalisation (Eisenhardt, 1989).

The firm selected is Compagnia della Bellezza, an Italian leading franchising company of hair salons, that is promoting the COE in a way that is completely different from the traditional and well-known made in Italy. In the Italian hair-care industry, populated by thousands of microfirms and small businesses led by figures of traditional artisans, Compagnia della Bellezza innovated the business model by introducing 30 years ago the franchising system and contributing to create a stable network of hair-designers, stylists and beauty-givers. More recently, thanks to a strong but effective rebranding, the company moved to a concept of “made by Italy”, converting the Italian hair-care industry into a sort of fashion industry where creativity, design, style are the most important pillars of the corporate strategy and of their business model.

Since the case analysis is still in progress, we collected secondary data from the company as well as from the web interviews and the company website. Moreover, we collected information from the entrepreneur in order to understand the main elements of the value proposition of the firm. Interviews to the entrepreneur, as well as to other managers of the firm will be conducted to expand data collection.

The data were analysed starting from the concept of value proposition because one of the biggest challenges in service research is identifying and communicating with relevant stakeholders (Chandler, Lusch, 2015). To this aim, value proposition plays a critical role by guiding stakeholder communications (Ballantyne et al. 2011; Kowalski 2011).

Results. Starting from the framing of the research, which is based on the field of studies about COE, we examined data collected with reference to the case study analyzed, in order to better understand the elements of a winning value proposition for service firms. Based on this analysis, we tried to create a framework that explores how value proposition is designed to ensure valuable and trustworthy services.

As it is known, creating and communicating the value proposition is a critical issue for firms aiming at positioning their product or service in target market (Ballantyne et al. 2011; Kowalski 2011; Pawar et al., 2009).

In fact, value proposition highlights the promise of benefits for customers (Chandler, Lusch, 2015; Osterwalder, Pigneur, 2010), thus facilitating the relationship between the firm and the market.

The proposed framework highlights those features characterizing mainly value proposition of service firms, which have been brought back to three main elements, showing, at the same time, differences in the design of the value proposition between manufacturing and service firms.

- From firm to person

The role of the service provider as a “person” is emerging as a key determinant of success for service companies seeking to strengthen their ‘made in’ value proposition. Service providers act as curators towards consumers by creating a friendly atmosphere (Kotler, Stigliano, 2018). Service providers act as facilitators through which the intangible aspects and essence of service are translated into tangible experiences and offerings. Their role goes beyond mere execution; it involves promoting creativity and shaping perceptions, as well as stimulating innovation acceptance. They navigate between consumer expectations, market trends, and the intrinsic qualities of the ‘made in’ label. Creativity, in this context, encompasses the ability to imagine novel solutions, anticipate consumer needs and develop persuasive narratives that enhance the appeal of the services produced (Giannopoulou et al., 2014).

- From standardization to personalization

In the service delivery, there is an opportunity to practice personalization and customization of service (Sunikka, Bragge, 2012; Bleier et al., 2018). In particular, personalization attains to a proactive behavior of service provider elaborating an offer based on the evaluation of customer needs. While customization relates to a reactive behavior aimed at meeting needs and requests of customers not previously considered in the value proposition.

Delivering experiences that resonate on a personal level can create an emotional attachment to the brand, resulting in customers becoming brand ambassadors (Bleier et al., 2018). This ability is linked to the concept of personalization, characterized by a proactive approach to tailoring services based on a deep understanding of individual consumer preferences. The integration of personalization into service delivery can strengthen the relationship with customers and foster loyalty and advocacy. Previous research has shown that consumers are more likely to adopt a personalized service because it can meet their individual needs (Guo et al., 2016; Komiak, Benbasat, 2006). Personalization techniques enable service providers to anticipate and address consumer needs before they are explicitly expressed, thereby enhancing a sense of intimacy and responsiveness to the brand. Service providers can demonstrate awareness of consumer preferences and showcase their creativity by offering personalized solutions that align seamlessly with their customers’ preferences. This proactive stance positions the ‘made in’ value proposition as synonymous with personalized excellence. Advanced technologies such as Data Analytics can provide valuable insights into how customers behave, enabling service providers to anticipate and respond to customer needs (Skälén et al., 2015). This

allows service providers to anticipate customers' needs and offer tailored solutions with accuracy and efficiency. Therefore, the deliberate incorporation of personalization is not merely a transactional tactic, but a crucial foundation upon which service companies build their value proposition.

- *From product's production to service co-creation*

The concept of customization represents a complementary approach to enhancing the value proposition within service companies. Customization embodies a reactive approach to service, where the emphasis is placed on actively involving the customer in the co-creation process. In the context of service firms, customization serves as a mechanism to foster a deeper engagement between service providers and consumers. The 'service-dominant' logic within marketing (Vargo, Lusch, 2004), makes explicit the notion of 'co-created value'. It holds that firms offer value propositions, that value is co-created during interactions, and that value is subjectively determined by the customer in context, e.g., when the customer uses services (Edvardsson et al. 2011; Vargo, Lusch 2008). By inviting customers to actively participate in the design and configuration of their desired offerings, service providers not only empower individuals to express their preferences but also demonstrate a commitment to fulfilling their unique requirements. This collaborative approach fosters a sense of commitment and empowerment among consumers. In the literature about services, different terms, like individualization (Riemer & Totz, 2001), profiling, one-to-one marketing, have been used over the years to describe this process in the service's context of meeting the needs of individual customers. The aim is to provide a service content that best meets the needs of the customer and adapting the way the service is delivered (Zhang and Sundar, 2019).

The proposed framework represents a first step toward theory development about "made in" in service industry. Adding the role of specific elements, i.e. persons, personalization, and customization through co-creation, to the traditional elements underlying value proposition of manufacturing firms, our framework expands the view on COE including the value of intangibles. This result allows to identify a new label, that we have named "made by", which more clearly highlights the element for a winning value proposition of services.

Thus, the evolution of "made-in" into "made by" represents a possible extension of the "country-of-origin" effect and it highlights the importance of persons, creativity, culture and not only the technical standards of goods.

This new concept represents a promising field of investigation in order to extend the applicability of the COE, focusing more on intangible dimensions such as creativity, design, culture, entrepreneurial spirit, and so on.

Research limitations. The main limitation of this study is that, with regard to the conceptual domain of the "country-of-origin" effect literature, while the "made in" concept that has a well-known list of definitional features, the "made by" is a risky construct. In fact, since it is still ongoing, it may overflow into a buzzword having different even contradictory meanings. However, the next step of this study aims to provide demonstration to the construct of "made by", through empirical analysis. In particular, we will conduct both multiple case study analysis, by interviewing entrepreneurs and managers of service firms conducted on the side of the methodology, a single-case study may be not enough to represent the large variety of firms and businesses largely falling into the "made by" concept.

Managerial implications. The paper has intriguing implications for managers of companies operating in service businesses where the culture, the lifestyle, the entrepreneurial spirit of individuals and business leaders may be distinguishing intangibles that can make the difference in the global arena. These intangibles are embedded in the firms' strategies and become also an important pillar of the organizational culture and a source of innovation.

Originality of the paper. The paper introduces for the first time the concept of "made by" in the business economics and management studies, extending the boundaries of the existing COE.

The concept of "made by" that is an evolution of the label "made in" (and of the COE) – a topic largely examined by different streams of the business economics and management literature. On one side, the "made by" concept aligns with current trends in manufacturing and agriculture systems that prioritize customization, where technology, product life cycles, and consumer demands drive a more personalized approach to production. On the other side, the "made by" can be seen as a move to a more sustainable and ethically conscious paradigm where the focus on who is making the product and how it's being made becomes as important as the product itself.

If we consider, for example Italy, The shift from "made in Italy" to "made by Italy" label represents a nuanced but significant change in branding and perception, focusing less on the iconic but too generic geographic origin of products, and more on the craftsmanship, design ethos, and creative origins behind them. Shifting to "made by" Italy moves the focus to artisans, companies, and designers originating from Italy, but highlighting their unique skills, creative designs, and innovative production processes. It suggests a completely different narrative that values the artistic and creative contributions of individuals, business leaders and brands, embodying Italian excellence in a global context.

In addition, the transition towards "made by Italy" can encompass a broader spectrum of firms, including service businesses alongside traditional manufacturing and agriculture sectors. For instance, this shift recognizes the importance of the digital economy and innovation in the global marketplace, where Italian service businesses are playing an important and significant role thanks to startups and innovative SMEs. Incorporating service businesses into the "made by Italy" concept reflects the evolving nature of global business models where services are increasingly integral to delivering value and enhancing product offerings.

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Track 18
Intelligenza artificiale nel management

From Data to Action: AI-Enhanced Prediction of Business Crises Integrating Financial and Social Media Insights

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Abstract

In recent years, various economic and financial upheavals have underscored the need for robust mechanisms to identify and mitigate corporate crises. Particularly, there is a growing recognition of the predictive potential of non-financial information, such as data from social media. As contemporary firms extensively use them for communication, these platforms offer valuable insights into evolving crisis situations. Hence, integrating social media-derived information into crisis prediction models is becoming increasingly imperative to enhance firms' predictive capabilities. This ongoing research, part of a PRIN project, proposes a novel framework for predicting corporate crises by integrating, mainly, financial and social media data through Artificial Intelligence (AI) techniques. Grounded in the context of Italian SMEs, the research aims to enhance the accuracy and timeliness of crisis prediction models and the integration of AI algorithms enables the automated processing and analysis of extensive datasets, facilitating the identification of hidden patterns and early warning signals indicative of impending crises. While emphasizing the importance of financial stability and sustainability, the research also acknowledges the dynamic nature of social media as a source of real-time market sentiment and stakeholder engagement. Despite facing challenges such as data availability and the complexity of AI implementation, the originality of this work lies in its holistic approach, which bridges the gap between different domains to provide a comprehensive framework for crisis prediction tailored to the needs of SMEs in the Italian context.

Key words: corporate crisis; artificial intelligence; social media; insolvency prediction; machine learning.

Framing of the research. *The past few decades have been marked by significant economic and financial upheavals, including the profound impacts of events such as the 2008 financial crisis leading to a global recession, subsequent sovereign debt crises in certain European nations between 2009 and 2010, and the unprecedented challenges presented by the covid-19 pandemic in 2020. These occurrences have underscored an escalating imperative for the development of robust mechanisms aimed at proactively identifying and mitigating crises and insolvency within firms (lo Conte et al., 2023; Ahmadi et al., 2019). Altman's seminal model from 1968 represents a landmark contribution in this domain, renowned for its capacity to differentiate financially stable enterprises from those perilously close to insolvency based on pivotal financial indicators (Bottai et al., 2004; Altman et al., 1994). Nevertheless, despite subsequent enhancements, including revisions by Altman himself, the applicability of this model has remained largely confined to publicly traded manufacturing firms, revealing limitations in its adaptability to diverse organizational contexts (Austin et al., 2012; Atiya, 2001). In response to these constraints, there has been a burgeoning of innovation in insolvency prediction methodologies, leveraging advancements in algorithms and AI (Bacham & Zhao, 2017; Barboza et al., 2017). This evolution has precipitated a growing recognition of the need to incorporate an expanded array of variables, encompassing both structured financial metrics and unstructured non-financial elements, into predictive frameworks (Aguinis & Burgi-Tian, 2021; Kim, 2005; Kim et al., 2003). In particular, there is a burgeoning recognition of the potential utility of non-financial information, such as data gleaned from social media platforms (Paniagua & Sapena, 2014; Rapp, 2013). Contemporary firms extensively utilize social media channels as a means of communication with stakeholders, thereby rendering these platforms a potentially rich source of insight into evolving crisis situations (Becker et al., 2013; Antweiler & Frank, 2004).*

Consequently, there is a growing imperative to integrate social media-derived information into crisis prediction models, recognizing the increasingly pivotal role of these platforms in shaping corporate discourse and stakeholder perceptions. In fact, leveraging insights garnered from social media discourse holds promise as a complementary strategy to traditional financial metrics, offering a more holistic understanding of a firm's resilience and susceptibility to crisis

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and insolvency events (Abbodi et al., 2023; Becker et al., 2013). Moreover, by harnessing the power of algorithms and AI to analyze vast troves of social media data, firms can potentially enhance their capacity to detect early warning signs of impending crises, enabling timely and proactive intervention strategies (Becerra-Vicario et al., 2020). In essence, the convergence of innovative methodologies, including advancements in AI-driven predictive analytics and the utilization of social media-derived insights, heralds a transformative paradigm shift in the realm of crisis and insolvency prediction and management. By embracing these interdisciplinary approaches, firms can fortify their resilience and responsiveness in navigating the complex and dynamic landscape of contemporary business environments. That said, contemporary scholarly investigations elucidate the profound impact of news dissemination across various channels on the performance dynamics and trading activities within the stock market of the implicated companies (Smales, 2015). Furthermore, building upon the theoretical underpinnings of Yan et al. (2014) and leveraging the conceptual framework of the Social-Mediated Crisis Communication Model (SMCCM), scholarly inquiry delves into the intricate interplay between corporate crises and their propagation dynamics across social media platforms, alongside their perceptual resonance among consumers. This analytical endeavor seeks to discern between internal and external crises, thereby furnishing strategic guidance to enterprises regarding the optimal sourcing and dissemination strategies for crisis-related information vis-à-vis consumers and external stakeholders (Cheng, 2018). As the landscape of social media continues to evolve, the SMCCM underscores the evolving credibility attributed to information disseminated via these platforms, irrespective of its institutional provenance, thereby accentuating the need for nuanced crisis communication strategies (Smales, 2015).

In parallel, empirical investigations by Mengelkamp et al. (2023) endeavor to unveil the nuanced relationship between sentiment expressed through social media discourse and the prospective financial distress of companies, employing advanced sentiment analysis techniques. Notably, findings suggest a discernible correlation between negative sentiment expressions and impending corporate crises, thereby highlighting the potential utility of sentiment analysis as a predictive tool (Mengelkamp et al., 2023). However, these findings are juxtaposed against contradictory conclusions drawn by Khalifa et al. (2023), which challenge the purported predictive efficacy of electronic word-of-mouth (eWOM) in delineating financial performance trajectories. Other notable research endeavors have contributed to our understanding of crisis and business dynamics and their interplay with social media: for instance, a significant relationship has been identified between news sentiment and stock returns of companies pertaining to the news themselves, with an analysis of how this relationship varies over time (Rocca et al., 2021; Tetlock, 2007). The use of social media by local governments to disseminate environmental action plans to citizens has been examined, revealing divergent interests between governments and citizens on environmental issues (Rosati, 2019; Sung & Hwang, 2014), while an investigation into agenda setting across various media concerning corporate crises delineates how the thematic propagation and its effects unfold among the population, with crises categorized into four distinct phases (Kumar et al., 2020; Waseem & Rashidi, 2013). Additionally, studies on stock messages have shown their predictive ability in forecasting market volatility, with message disagreement leading to increased trading volume, particularly for small-sized firms (Elena, 2020; Eliwa et al., 2019). Lastly, media pessimism has been found to correlate with market price declines, and extreme levels of pessimism predict elevated trading volumes (Jin et al., 2014).

In the realm of predictive analytics, Ben Jabeur et al. (2023) and Carmona (2023) propose an innovative FS-XGBoost algorithm designed to forecast corporate failure. Their research underscores the evolving landscape of crisis prediction methodologies, leveraging both structured financial metrics and unstructured non-financial elements, such as sentiment analysis derived from social media discourse. On the other side, Rosati et al. (2019) delve into the dynamics between data breach incidents, social media discourse, and stock price reactions, discerning nuanced patterns across various types of firms. Their findings underscore the multifaceted interplay between online reputation management and financial performance, underscoring the need for comprehensive crisis mitigation strategies.

The phenomenon of negative publicity yielding positive effects on sales, as explored by Berger et al. (2010), adds another layer of complexity to crisis dynamics. Their research, in fact, underscores the potential of negative reviews in enhancing product awareness and consumer engagement, thereby reshaping traditional perceptions of crisis communication strategies. Lastly, Pozharliev et al. (2022) offer insights into the viral dissemination of online content, emphasizing the pivotal role of emotional valence in driving information diffusion dynamics. Their study highlights the interplay between content virality and emotional resonance, underscoring the need for nuanced content strategies in crisis communication endeavors.

That said, it is imperative to acknowledge the heterogeneity in social media adoption among enterprises, particularly within the realm of small businesses, where disparities in digital engagement persist, with some entities yet to embrace active social media participation as a strategic imperative (Pozharliev et al., 2022; Yang et al., 2015; Becker et al., 2013). Consequently, the evolving landscape of social media engenders both opportunities and challenges, necessitating a deeper understanding of its transformative potential in crisis and insolvency communication paradigms. In summary, while contemporary scholarship illuminates multifaceted dimensions of crisis dynamics and their interplay with social media, persisting empirical ambiguities underscore the imperative for continued interdisciplinary inquiry (Mainardes et al., 2020; Betti et al., 2018). By synthesizing insights from finance, communication studies, and organizational behavior, future research endeavors hold the promise of elucidating proactive and innovative strategies for preemptive crisis management, thereby fortifying organizational resilience in an increasingly volatile landscape.

Purpose of the paper. This ongoing research is part of a PRIN project involving four universities: Università della Calabria, Università degli Studi del Sannio di Benevento, Università degli Studi di Messina, and Sapienza Università di Roma. Currently, the study is in the literature review phase and is refining its methodology. Initial financial data is being collected from the AIDA database, distributed by Bureau van Dijk S.p.A., along with social media data. The main

objective of this research is to expand upon existing research by incorporating sustainability and, mainly, social media engagement variables into the predictive factors of business crises. Therefore, this study aims to develop an AI-based algorithm capable of autonomously predicting and managing corporate crises. The study addresses a gap in current methodologies by considering not only financial aspects but also factors impacting business performance at economic, market, and reputational levels. Specifically, the research targets small and medium-sized Italian enterprises with a proactive presence on social media, focusing on those experiencing insolvency. During its dedicated time-frame, the project aims to achieve the following objectives:

- to enhance the accuracy of predicting corporate financial distress in Italian SMEs;
- to identify a blend of diverse variables (financial, ESG, and web-based data) with superior predictive capability compared to traditional credit-scoring models, thereby mitigating corporate financial crises;
- to determine the lead time before a crisis by detecting early signals of potential financial distress;
- to contribute significant advancements to the scientific and technological community by pioneering AI-driven approaches for strategic decision-making and qualitative analysis;
- to develop a user-friendly platform readily accessible for assessing a firm's default probability.

Furthermore, the project incorporates two innovative elements:

- the adoption of cutting-edge machine learning techniques to process extensive datasets and variables, aiding decision-makers in forecasting corporate distress and averting crises;
- the exploration of optimal predictive models, including a generalist approach applicable across all industries and countries, as well as industry-specific and/or country-specific models, to determine the most effective strategy.

Of particular relevance to our research design are specific neural network architectures, such as recurrent neural networks (RNNs), adept at addressing regression and classification challenges in datasets with temporal dimensions, where individual inputs consist of sequential observations over time (Filletti & Grech, 2020; Charalambous et al., 2000). While literature abounds with examples showcasing the efficacy of such neural networks in signal analysis, their application in predicting corporate crises remains largely unexplored. In this scenario, the neural network discerns statistical structures within the sample, such as correlations or associations, yielding outputs that elucidate such relationships. In practice, the project will leverage these machine learning techniques to predict corporate crises, with a focus on creating a model capable of facilitating firms' decision-making by considering both recent and historical information. Moreover, the study aims to harness the properties of autoencoders to represent the market for each industry at any given time, incorporating unstructured information available from various sources. The plan is to integrate structured industry information with feedback and comments extracted from social media platforms. By applying sentiment analysis filters, feedback types can be effectively labeled and classified, enriching the autoencoder's latent representation with essential semantic dimensions. This representation, encoding information for all firms within a specific sector over different time points, will serve as input to the predictive model, aiming to enhance prediction accuracy. The resulting model will contextualize predictions within specific industries without relying on explicit pre-coded information about their evolution dynamics, leveraging perceptions gleaned from semi-structured information sources. Hence, the design and development of the model will employ an innovative methodology, combining various machine learning techniques, temporal dimension data, and encoded information, tailored to each specific analytical context. In light of this, our primary Research Question can be expressed as follows:

- “What are the implications of integrating social media engagement variables into predictive methodologies for business crises, particularly focusing on Italian SMEs with a proactive social media presence, and how can AI-driven algorithms autonomously predict and manage corporate crises and insolvency in this context?”

The articulated nature of the Research Question reflects the depth, novelty, and multidimensionality of the study. Moreover, the inclusion of AI-driven algorithms to autonomously predict and manage corporate crises and insolvency adds a layer of innovation and sophistication to the inquiry. This comprehensive approach underscores the interdisciplinary nature of the research, which integrates elements from finance, technology, and social sciences. Furthermore, the focus on SMEs, a crucial segment of the business landscape, emphasizes the practical relevance and potential impact of the study on real-world decision-making processes. In fact, the RQ embodies a robust framework for addressing contemporary challenges in corporate crisis management, offering insights that are both academically rigorous and practically applicable.

Methodology. The methodology for this ongoing research involves a meticulous process of data collection, verification, and integration to create a comprehensive framework for predicting business crises among Italian SMEs. At the outset, historical data on various financial metrics, market performance, ESG ratings, and social media engagement is gathered from diverse sources. A significant aspect of the methodology entails the collection of social media data, particularly from Twitter, which is recognized for its significance in our research objectives. This involves considering the use of APIs or data scraping techniques to gather real-time social media data. Simultaneously, access to the AIDA database is secured, and various filters are applied to narrow down the selection criteria. Manual verification is then conducted to confirm the existence of corresponding Twitter accounts for potential SME candidates. While the current

verification process is manual, efforts are directed towards potential automation through the development of AI algorithms capable of autonomously identifying companies from AIDA with Twitter accounts. However, several challenges and considerations must be addressed throughout the process. These include the limited adoption of Twitter among Italian businesses, variability in social media engagement strategies, and the integration of financial and social media data within the predictive model. In fact, initial findings suggest a passive engagement strategy among Italian SMEs on Twitter, highlighting the need for deeper analysis to extract meaningful insights.

The specific AI model to be employed for processing and analyzing the collected data is still under consideration. Various machine learning algorithms, including supervised, unsupervised, and deep learning techniques, are being evaluated to determine the most suitable approach for the research objectives. Furthermore, considerations regarding the integration of the AI model with existing methodologies and frameworks are being taken into account to ensure seamless implementation and compatibility with the research goals. As the project progresses, the chosen AI model will undergo rigorous testing and validation to assess its performance and reliability in predicting business crises and informing strategic decision-making processes. However, for social media variables, the following aspects will be considered:

- *user profile information*: this includes attributes such as name, profile description, following count, follower count, and tweet count. Analyzing user profile information provides insights into the demographics and activity levels of users interacting with SMEs. For example, variations in follower count or posts count may indicate the reach and engagement levels of SMEs, influencing their visibility and potential impact on stakeholders;
- *tweet content (for Twitter)*: this encompasses the text, author details, hashtags, topics, and related metadata of tweets. Examining tweet content allows for sentiment analysis, topic modeling, and trend identification. Understanding the themes and sentiments expressed in tweets related to SMEs can reveal public perception, sentiment shifts, and emerging issues affecting their reputation and market sentiment;
- *interactions*: interactions such as follows, posts, retweets, and likes reflect user engagement and influence. Tracking interactions enables the assessment of SMEs' social media engagement strategies and their effectiveness in fostering audience engagement and brand advocacy. Additionally, analyzing patterns of interactions with SMEs' tweets can uncover influential stakeholders, potential brand ambassadors, and key opinion leaders within relevant industries.

By integrating these social media variables with financial and ESG data, the predictive model will gain a more comprehensive understanding of the factors influencing business performance and crisis susceptibility. The combination of quantitative financial metrics with qualitative social media insights then enables a holistic assessment of SMEs' resilience and vulnerability to crises, fundamental elements for our research. That said, we can also affirm that ethical considerations are paramount throughout the entire research process, particularly when dealing with sensitive social media data. As we embark on data collection and analysis, it is imperative to prioritize ethical practices to uphold user privacy and maintain data integrity. We must also mitigate biases, promote fairness, and implement robust data security measures to safeguard against unauthorized access or breaches. Ongoing monitoring and review mechanisms will be established to promptly address any ethical concerns or compliance issues that may arise, ensuring that our research upholds the highest ethical standards and respects the rights and privacy of all individuals involved.

Results. Keeping in mind the project objectives, the expected results of this research are poised to significantly advance the field of crisis prediction and strategic decision-making. Firstly, we anticipate substantial enhancements in the accuracy and reliability of forecasting corporate financial distress. By leveraging innovative machine learning techniques and integrating a diverse array of variables, the predictive model is expected to exhibit heightened efficacy in discerning early warning signals of impending financial crises. This heightened predictive capability holds promise for empowering decision-makers with timely insights to preemptively address emerging challenges and proactively mitigate financial risks. Furthermore, through meticulous data analysis and model formulation, we envisage the emergence of a robust AI-driven algorithm adept at autonomously forecasting and addressing corporate crises, with a particular emphasis on small and medium-sized Italian enterprises exhibiting proactive engagement across social media platforms. The anticipated outcomes of this research endeavor are also expected to furnish substantial contributions to scholarly discourse, inform industry best practices, and furnish policymakers with insights crucial for devising effective strategies aimed at fortifying business resilience and sustainability. Ultimately, endeavor to equip businesses with actionable insights and strategic foresight requisite for manage in a proactive way crisis situations. Initial analyses suggest that the incorporation of diverse data sources, including social media, enhances the predictive power of models, enabling more accurate identification of early warning signals and proactive crisis management strategies. Specifically, we expect to observe a discernible correlation between certain social media engagement metrics, such as sentiment analysis of tweets or user interaction patterns, and the likelihood of impending financial distress or crisis events. However, it is essential to acknowledge several limitations that may impact the availability and reliability of SMED and the utilization of AI in crisis prediction. Despite the growing importance of social media as a communication tool for businesses, there may be challenges in accessing comprehensive and high-quality data, particularly for smaller enterprises with limited online presence or irregular social media activity. This scarcity may constrain the granularity and predictive accuracy of models, necessitating careful consideration of data imputation techniques and model validation strategies. Moreover, biases inherent in training data or algorithmic decision-making processes may inadvertently perpetuate inequalities or amplify existing disparities, underscoring the importance of robust ethical frameworks and algorithmic accountability mechanisms.

Research limitations. *Despite the anticipated contributions and expected outcomes, several limitations warrant acknowledgment. Firstly, the availability and quality of SMED may pose constraints on the comprehensiveness and reliability of the predictive models developed. Given the dynamic and heterogeneous nature of social media platforms, capturing and interpreting relevant signals amidst noise and variability present significant challenges. Additionally, reliance on publicly available data may overlook insights from proprietary or restricted sources, potentially limiting the depth of analysis. The interpretability and transparency of AI models also present challenges, as complex algorithms may obscure causal relationships and undermine stakeholders' trust in the predictive outcomes. Furthermore, the generalizability of findings may be restricted by the specific context and characteristics of the sample, particularly given the focus on Italian SMEs and their social media engagement patterns. Lastly, ethical considerations surrounding data privacy, algorithmic bias, and stakeholder consent necessitate careful navigation and adherence to ethical guidelines throughout the research process.*

Managerial implications. *The findings of this research hold significant managerial implications for SMEs. Firstly, the identification of early warning signals and predictive factors offers SMEs an opportunity to proactively address underlying issues and fortify their financial resilience. By leveraging the AI-based predictive models developed in this research, firms can monitor key indicators such as debt-equity ratios, liquidity ratios, and social media sentiment to assess their financial health and detect signs of distress in advance. Moreover, the integration of social media engagement data into the predictive framework underscores the importance of active and strategic engagement on digital platforms. Firms can leverage social media channels not only for marketing and branding purposes but also as a means of gauging customer sentiment, identifying emerging trends, and preempting potential reputational risks.*

Furthermore, the development of user-friendly platforms for assessing crisis probability empowers SMEs with accessible tools for financial decision-making and risk management. By gaining insights into their likelihood of facing a financial crisis, they can allocate resources more judiciously, optimize capital structure, and implement targeted interventions to strengthen their financial position. Additionally, the availability of industry-specific predictive models enables SMEs to tailor their strategies and responses to sector-specific dynamics and challenges, enhancing the relevance and applicability of the insights derived.

Originality of the paper. *The originality of this paper lies in its multifaceted approach to predicting business crises through the integration of financial, ESG and, mainly, social media data using AI. While existing literature has explored predictive models focusing solely on financial metrics or social media sentiment analysis, this study represents a novel endeavor by synthesizing diverse sources of information to enhance predictive accuracy and robustness. The inclusion of social media engagement data adds a dynamic and real-time dimension to the predictive framework, capturing evolving stakeholder perceptions and market sentiments. The application of advanced AI algorithms further distinguishes this work, allowing for the automated processing and analysis of extensive datasets to uncover hidden patterns and relationships. Additionally, the emphasis on SMEs in the Italian context adds specificity and relevance to the research, addressing a gap in the literature concerning crisis prediction models tailored to the needs of smaller Italian businesses. Overall, the originality of this paper lies in its holistic and innovative approach to crisis prediction, offering a comprehensive framework that leverages the synergies between diverse kind of data to enhance decision-making in the specific Italian context.*

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When does technological innovation overlap social innovation? Conceptualizing an organizational ai-driven model

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Framing of the research. *Artificial Intelligence is one of the main technologies that have been marking the Fourth Industrial Revolution, a time characterized by digital transformation. Although there is no precise agreed definition, artificial intelligence can be considered a research field “...devoted to making machines intelligent, and intelligence is that quality that enables an entity to function appropriately and with foresight in its environment (Nilsson, 2009).”*

With its first appearance dating back to 1950 with Alan Turing’s test and his question “Can machines think?” (Turing, 1950), AI development flourished over the following decades initially thanks to the improvement of computers’ storage capacity and computational power. However, the real growth of this technology occurred only with the arrival of Big Data, which allows us to accumulate large amounts of information that exceed individual capabilities (Rialti et al., 2019). Indeed, the proliferation of data combined with new computational resources makes it easier for AI to improve (Zhuang, 2017).

Although AI has entered our daily lives at a later time, its effects have already positively disrupted many business realities. According to Eurostat, in 2021 8% of EU enterprises used AI technologies. The number increases to 28% if large EU enterprises are the only ones considered. The application of AI is visible in diverse areas, such as marketing, supply chain management and customer service. The size of the AI market is projected to grow from 207 billion US dollars in 2023 to nearly 2 trillion US dollars in 2030 (Statista).

Furthermore, the application of AI in organizations can be divided in two main fields: automation, which main function is to replace human work, allowing the relocation of the workforce, and augmentation, which focuses on enhancing human intelligence and providing support in the decision - making process (Enholtm et al., 2022). A practical example of the first category is the use of machine learning algorithms in logistics and transportation that has made the coordination of the warehouses more efficient, thanks to AI - powered robots that sort and pack products reducing time - waste. This type of automation is also known as “Intelligence Automation” because it can be applied on tasks previously considered too difficult to be automated (Hassani et al., 2020). Conversely, an example of augmentation is the development of predictive M&A logit models used in the formulation of investment strategies. Findings show that prediction models built with AI can generate impressive returns, averaging up to 49% for a portfolio of a company anticipated to be acquired (Elizariyev and Fokinaed, 2023).

A MIT study supports the results previously discussed, as it has been reported that more than 80% of organizations see AI as a new strategic opportunity to compete in the market (Ransbotham et al., 2017) and it can provide significant advantages to those who enter the field earlier. In particular, this benefit is evident in the opportunity to attract early adopters and to recruit talented individuals, creating a self-reinforcing cycle and leveraging economies of scale (McWaters et al., 2018). However, in order for organizations to make the implementation of AI valuable for their businesses, it is fundamental to possess specific capabilities. These are AI - specific assets such as algorithms and training data, as they are key elements to enable value creation (Schmidt et al, 2020). Nonetheless, the success of AI in business increasingly lies in the ability of employees to be creative, have critical thinking, and be able to collaborate and communicate with technologies (Choi, 2020).

Even so, the potential of AI within the organizational context is not necessarily limited to performance and profit oriented gains. Fields such as healthcare rely on AI for improved medical image quantification, genetic data automated analysis or disease prediction, contributing in adding social value. Indeed, AI-based solutions were at the basis of the response to the global health crisis caused by COVID-19, which accelerated the application of such technologies in the medical area (Lekadir et al., 2022). Although this kind of contribution is clearer in areas where social impact is direct, such as healthcare or education, positive social outcomes can also be identified in industries which are perceived to be more profit oriented. With the right premises, the integration of such solutions can generate social value within organizations, and even beyond, whether it is a voluntary or involuntary effect.

For example, automating repetitive tasks through AI lets employees focus more on activities where human capabilities are more needed (Enholtm et al., 2022; Toniolo et al., 2020), which results in reduced workload and more energy and time

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saved for more meaningful work. This may also increase sense of purpose, impacting positively how employees perceive the working environment. However, AI robots in manufacturing can improve safety and working conditions, sparing the workforce from dangerous or heavy tasks (Enholm et al., 2022; Toniolo et al., 2020). These examples show how in certain cases AI can enhance performance as well as other factors, including social ones; such considerations trigger the transition of artificial intelligence from technological innovation to social innovation in the business sphere.

In the realm of innovation, artificial intelligence can be considered a technological one, which simply refers to the introduction of novel technologies inside organizations (Damanpour & Evan, 1984). Understanding of the concept of innovation is crucial before exploring AI specifics. Innovation can be defined as “(1) a new idea, method, or device or (2) the introduction of something new” (Merriam-Webster, 2024). However, these two definitions hold two different meanings: the first one refers to an idea of outcome, while the latter focuses on process. As suggested by Kahn (2018), innovation should be considered both in its process and outcome side for a balanced view and to avoid any type of consequential shortcoming. Innovation in terms of outcome within an organization refers to the idea of introducing a novelty inside of it. These may vary in typology, as throughout the years different classifications have been developed. Examples include the distinction between process and product innovation, as well as administrative and technical innovation. Organizational AI would generally be classified as a process and technical innovation.

Instead, innovation in terms of process represents the way innovation is pursued, organized, planned, and performed. Such aspects should not be overlooked as they eventually lead to the outcomes previously mentioned.

Innovation plays a crucial role in the strategy of organizations, and it is fundamental for long-term strength and survival regardless of its origin, which can be internal or external (Damanpour & Gopalakrishnan, 1999). However, the idea of organizational innovation is often tied mainly to performance and profit-driven perspectives, with the risk of overlooking other aspects that may play a role in innovation’s whole picture. In the case of technological innovation for instance, new technologies can lead to better ways of meeting social needs, becoming drivers of social innovation (Zollo et al. 2015). The OECD (2024) defines social innovation as “the design and implementation of new solutions that imply conceptual, process, product, or organizational change, which ultimately aim to improve the welfare and wellbeing of individuals and communities”. Furthermore, the LEED Programme from the OECD (2024) adds how implementing new elements that improve the position of individuals in the workforce, such as labor market integration processes, new jobs or skills, fall under the umbrella of social innovation.

Such considerations imply how innovation inside organizations, including new technologies, are capable of leading to social innovation, and thus create added social value, both internally and externally.

Purpose of the paper. The application of AI within organizations has brought new kinds of challenges (Duane et al, 2019), as research has been for long focusing more on technological aspects and how to leverage AI, while the way technology is adopted and the main value generating mechanisms are often overlooked (Enholm et al., 2022). In this regard, social value and the impact of AI on workers and workplaces are aspects that need to be addressed and discussed about, considering its disruptive power. Debates surrounding such topics are still ongoing and highly polarized (Bankins et al., 2023). In contrast to those promoting the benefits of AI, such as improved productivity and job quality (Jarrahi, 2018; Spencer, 2018), many are highlighting the possible “harms of AI” (Acemoglu, 2021) or try to spread awareness about such aspects (Zirar, Ali & Islam, 2023). These fears are mainly related to concerns about job losses and substitution (Acemoglu, 2021; Frey & Osborne, 2017), as well as other factors such as distrust and overall negative attitude towards the technology that may negatively impact employees and their outcomes (Zirar et al, 2023).

As previously mentioned, there is a need for more discussion about the impact of AI beyond performance and profit gains. Both predominantly pessimistic and optimistic views cannot give a complete understanding of such dynamics, since AI is applied and perceived by workers in very different ways, along with different and complex socio-technical contexts in each workplace (Bankins et al., 2023). In this regard, our research aims at looking at the impact of AI in terms of social value within organizations, specifically the improvement of employees’ working conditions and workplaces. We focus on the elements that come into play inside businesses in the context of AI’s transition from technological to social innovation, by trying to understand which factors can affect the positive or negative outcome of such relation as well as the way they do it. Overall, the research revolves around the following research question:

- RQ1: Which elements inside an organization play a role in the transition of AI from technological innovation to social innovation?
- RQ2: How do these elements affect the transition of AI from technological innovation to social innovation?

With this research the authors hope to spread awareness and promote the ongoing debate surrounding the impacts of AI on organizations and how to responsibly implement such technology, by dealing with dynamics that may often be overlooked when thinking about its implementation. Our conclusions should provide managers with new insights and practices to create more value from AI implementation not only performance-wise, but also in relation to employees’ wellbeing and improved working environment. These elements in the long term are expected to also offer benefits in terms of productivity and overall organizational performance in the long term.

Methodology. The present research follows a qualitative approach, mainly consisting of an initial literature review paired with the observation of different case studies.

As mentioned, an exploratory literature review was performed to understand the state of the art of research regarding organizational AI. Among the most frequent keywords emerged from this research were “artificial intelligence”, “big data” as well as “research agenda”, the last showing how such topics are still being explored.

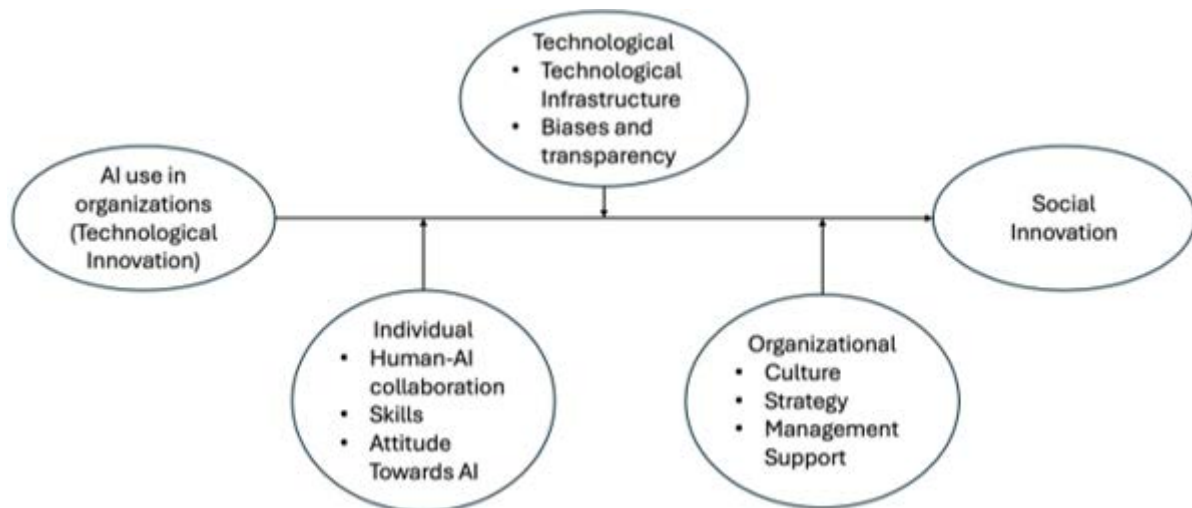
Furthermore, the findings collected were used as the foundation to narrow down the scope of the topic to social innovation and its impact on workers. The work involved dissecting the gathered information to categorize the factors and dynamics involved in organizational AI, regardless of their nature. This step was then followed by the selection of the factors considered to be influencing the social impact of AI, thus contributing to its transition to social innovation. Following an inductive approach, a comparison with several real on-the-field observations was made, in order to infer generalizations (Eisenhardt, 1989) to verify and support the preliminary considerations that came from the literature review.

Such methodology has led to the definition of four propositions which were summarized in a conceptual framework presented below, which includes three categories of factors influencing the relation between technological and social innovation in the case of AI.

Results. Three main groups of factors influencing the transition of organizational AI from technological to social innovation were defined from the literature review and the case studies observed: individual, technological, and organizational. The findings are summarized in the conceptual framework below (Fig 1), with the following propositions:

- P1. Organizational AI as a technological innovation can transition to social innovation, thus creating value.
- P2. Factors on individual level (employees) influence P1.
- P3. Technological factors influence P1.
- P4. Organizational factors influence P1.

Fig 1. The elements influencing the transition of AI in organizations from technological to social innovation.



Even before a whole organization, AI implementation impacts employees. Thus, factors at the individual level directly play a role in determining the technology's effects. From an optimistic perspective, workers and artificial intelligence can enhance each other's strengths (Henkel et al., 2020; Raisch & Krakowski, 2021). One of the examples that appear the most is the way AI can take care of most of the repetitive and routinely tasks, letting employees focus more on meaningful and "human skill demanding" activities (Shrestha, Krishna & von Krogh, 2021). These ways, as mentioned earlier, bring benefits such as more energy and time saved, reduced workloads and possibly higher worker satisfaction in the job they do. Overall, the quality of life of employees improves (Rožman, Oreški & Tominc, 2023).

To reap such value, it is necessary to pay attention to the relationship between the individual human and technology. Both research and insights from real observations have highlighted how a key component for positive outcomes in this case is a relation of human-AI collaboration (Wilson & Daugherty, 2018), which some even went as far as to call it "symbiotic" (Wilson & Daugherty, 2019). This collaboration stems from various elements that shape how humans and technology coexist and interact with each other (Bankins et al., 2023). For instance, perceived fit of AI to the individual's needs and tasks can lead to increased job satisfaction (Nguyen & Malik, 2022). Furthermore, the knowledge to understand the nature of the technology and trusting it can be beneficial, as well as having the skills to use it (Bankins et al., 2023; Chowdhury et al., 2022). Indeed, the set of skills of a worker contributes to defining this coexistence, but also the other way around. Introducing AI in organizational processes reshapes the skills valuable for a particular task; some may be transferred to AI while new ones will emerge for the sake of coexistence (Zirar et al., 2023). Additionally, this may also lead to new complete jobs born from the need of new professional figures (Morandini et al., 2023). Zirar et al. (2023) define three categories of skills needed in the new status quo of human-AI collaboration. The first one is technical skills, which are crucial as they allow individuals to work and coexist with technology. On the other hand, human skills, such as emotional intelligence and teamwork, and conceptual skills, which help in developing solutions through concepts and ideas and by visualizing AI applications in the workplace, are fundamental for creating productive work in highly digitized environments (Sowa, Przegalinska & Ciechanowski, 2021). In this regard, upskilling and reskilling are fundamental for this coexistence (Morandini et al., 2023), as well as job design (Bankins et al., 2023). Organizations and top management

should consider these elements when implementing AI as these impact the relation of individual workers with AI as well as their overall working conditions.

It is important to highlight that although these considerations can be perceived as more related to positive performance value, nevertheless social value would not be possible if all these factors mentioned are not declined in the right way. Furthermore, and most importantly, they contribute to determining the overall attitude of workers towards AI. Along with what has been said so far, attitude towards AI can be influenced by a series of perceptions and fears related to the nature of the technology. Literature and real observations have shown how workers may worry about being replaced in the future or AI making their skills eventually obsolete (Bankins et al., 2023; Zizar et al., 2023). This damages their attitudes towards AI as well as their working conditions. Additionally, such fears can lead to issues such as reduced organizational commitment, job insecurity, turnover intentions, burnout and other compromising consequences (Zizar et al., 2023). These threats can be countered by managing correctly the elements mentioned above, as well as through organizational efforts to make employees aware of their strategy and through training, upskilling and reskilling programs to facilitate technology adoption (Wilson & Daugherty, 2019; Bankins et al., 2023).

As a second proposition, the organizational environment plays a crucial role in bringing workers closer to new technologies and stimulating their use. Indeed, as analyzed in case studies, work environments characterized by a supportive and open-to-innovation climate are those where it is easier to encourage and foster automation processes, thanks to the ability of managers to smooth workers' fear of being replaced. Furthermore, organizations that provide employees with the necessary tools to increase their knowledge of implemented technologies and to reduce the feeling of indifference towards them are able to reduce anxiety and the sense of oppression. Additionally, by promoting training, upskilling and reskilling programs, especially for more operational workers, they can help managers in identifying possible areas or processes for intervention, especially after gaining familiarity with technologies; indeed, since managers cover a more organizational role, they could overlook potential time-consuming elements. In this way, workers will be stimulated to experience technology firsthand and with no more anxiety (Verma & Singh, 2022). Job design should also balance the responsibilities assigned between workers and AI applications when adopting technology, as it determines the experience with AI (Zihar et al. 2023). With optimal balance the work climate nurtures open-mindedness to change rather than fear and establishes a symbiotic partnership to augment each other's strengths. Organizations and management must be transparent about AI adoption and explain the strategy for AI implementation to workers. Thus, the environment plays a crucial role, but equally necessary is the support of managers in the digital transition (Alsheibani et al., 2020). Top managers must not only create an environment to spread technology, but also support integration with enough financial support to enable the purchase of software usage licenses and sustain the costs of training courses and updated devices. As analyzed in our examples, we can claim that top management and the workforce must mutually support each other to see significant social changes at the workplace.

The third and last proposition deals with technological factors. Firstly, the underlying infrastructure of AI necessitates substantial computational power (Baier et al., 2019), without which advancement would not be possible. Furthermore, AI is becoming an infrastructure upon which the development of future services and products will depend on (Robbins & Wynsberghe, 2022). Thus, these capabilities are required to properly integrate AI into operations, along with cloud-based solutions, like Google Cloud or AWS, as having such resources on site is not convenient for their dimensions. AI within algorithmic management practices in case of platform-based work also has a predominant negative effect on workers, as it can lead to feelings of isolation and alienation. This happens when workers operate through algorithms instead of managers and traditional human interaction.

However, workers also recognize higher flexibility, greater ease in performing tasks and better outcomes, also based on the way AI is integrated and the technological infrastructure underneath the platform used.

Prior research also indicates how employees are more inclined to engage with AI when they trust it. Indeed, a significant challenge facing AI adoption is the opacity of algorithms, which make it difficult to identify and fix errors (Ashta & Herrmann, 2021) and increases distrust. These AI models lacking transparency in decision-making processes are commonly referred to as 'black box' systems. Promoting transparent operations fosters social value when it increases workers' trust in AI by showcasing its explainability and effectiveness, thereby increasing the likelihood of delegating tasks to technology and benefiting from it.

Research limitations. This study shows what are the main factors that allow us to explain AI from a technological to a social innovation by analyzing the factors playing a role in technology integration in companies. However, the proposed study suffers from some limitations including the generalizability of the results, as a limited sample of case studies was considered, and only analyzing the point of view of workers.

Future research could analyze a larger sample than the one proposed in this analysis and explore the phenomenon from a quantitative point of view, focusing not only on large companies but also going to observe what happens to those employed in SMEs. In addition, the possibility of extending the research outside the Italian territory could bring out different results from those proposed.

Managerial implications. Through this study, it was possible to highlight the important social role AI may play when integrated into organizations. The results clearly show how the three factors under analysis (individual, technological, and organizational), can strongly influence the impact of AI from a social point of view, both positively and negatively. Companies should invest more in training programs, in order to stimulate and foster skills necessary to improve AI-human collaboration as well as to counter possible fears of job substitution from employees. Furthermore, job design can be another frontier where managers could enhance the social potential of AI by looking at the characteristics at individual level that could contribute to shaping the relationship between human and machine. Finally, technological elements are

crucial not only for performance gains and correct AI implementation, but also for the improvement of workers' job conditions thanks to AI.

Originality of the paper. This research aims at exploring the ongoing debate about AI's impact on organizations. The methodology includes case studies based on real observations as well as a review of existing literature. The originality of the paper consists in a novel way of observing this phenomenon, specifically from a point of view focused on social value, which in this case deals with the way the technology can contribute to improving workers' life and workplaces.

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Exploring the impact of Artificial Intelligence on Vocational Education and Training (VET)

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Abstract

Over the last decades, Artificial Intelligence (AI) has changed the way people do things as humans in both social and economic contexts. AI is still opening new development opportunities for several industries and sectors, boosting a paradigmatic shift in their typical processes and practices. This disruptive technology is also deeply reshaping education both at teaching and learning level. Drawing on these considerations, this paper aims at contributing to the growing research on the topic focusing on a specific education domain, the Vocational Education and Training (VET) investigating if and how AI application is reshaping this domain, enhancing the educational experience and consequently the related workplace. In doing so, an empirical research approach has been implemented, based on primary data gathered among VET trainers. The data gathering phase is still ongoing. fsQCA will be used to analyse the data. Some preliminary findings confirm that there is a growing demand for AI-oriented training in VET education. This suggests a growing recognition of the importance of AI skills and the desire to incorporate AI-related training into their programs and operations. This paper offers original contributions both to theory and practice defining the current and future practice that AI can improve, offering to professionals better and more collaborative educational services for enhancing their knowledge and competencies, and in doing so the overall workplace. However, it doesn't come without some limits. In particular, this study is somewhat limited by specificity of the analyzed domain and by the national scope of the analysis, which constrains findings generalizability.

Key words: Artificial Intelligence; Education; Vocational Education and Training (VET); workplace; wellbeing.

Framing of the research: Towards digital transformation of Vocational Education and Training (VET).

Education, as many other socio-economic domains, is undergoing a major transformation, driven by rapid technology development and their massive impact on society (Cookson, 2002; Gkrimpizi et al., 2023). This unprecedented change is reshaping the inner dynamics of this complex system, which is populated by several actors (institutions, teachers, learners, third-party companies, families, etc.), who interact at different levels (cognitive, intrapersonal, and interpersonal) and with a different commitment, contributing to shape a unique learning experience (Jacobson et al., 2016; Nasir et al., 2022). The role and influence of advanced technologies and of digital transformation – or the paradigmatic change of a huge amount of social and economic processes mediated by innovative digital technologies (Schallmo et al., 2018) – on education practice and management are globally attracting the interest of policymakers, scholars, and practitioners (Li and Wang, 2020). In education, digital transformation “involves rethinking the teaching and learning processes for an audience of digital natives, considering the practical aspects of the digital transformation, through knowledge and technical skills, and being digital, through the incorporation of skill, mindset, and digital attitudes” (Oliveira and de Souza, 2022, p.285). This implies that this pervasive phenomenon is pushing education experts to rethink both teaching and learning approaches to make them able to respond to the emergent learning needs developing, testing, and implementing new educational approaches and solutions. In this vein, some scholars investigating the impact of Industry 4.0 technologies on education have proposed the concept of Education 4.0, which is based on the “transformation of learning methods and innovative didactic teaching, with intelligent teaching tools and sustainable infrastructures complemented by emerging educational technologies” (Masdoki and Din, 2021, p.3). However, Education 4.0 and the concrete application of its advanced technologies (e.g., Internet of Things, Augmented

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Reality, AI, etc.) to real teaching and learning context is still yet to come. This is mainly due to a certain resistance to change that still affect education due to a general fear about technologies negative potential to replace traditional in-person educational activities (Bonnes et al., 2020), which influenced by some different factors such as 1) educators lack of technological confidence and expertise, 2) educators and learners lack of understanding of digital transformation potential benefit for education at all, 3) educators resistance to rethink traditional pedagogical and educational approaches, and 4) a general resistance to change of both educators and learners (Aditya et al., 2022). To overcome these persisting barriers some policy and managerial actions are needed to stimulate and promote, among others, literacy programs, for example, in partnership with industry partners and technology providers (Miranda et al., 2020) able to support a better understanding of how technologies can complement traditional education opening to new interactive and personalized learning scenarios, based on the intertwining of affective, cognitive, social, and technological settings (Gegenfurter et al., 2020).

A certain resistance to digital transformation is also affecting a specific sub-sector of education, the Vocational Education and Training (VET), which has been differently defined and approached over time and all around the world (Anderson et al., 2020). However, in 1984 UNESCO defined it as those processes related to the ability of practical knowledge, skills, attitudes, values that are related to various occupations, while in 1997 Psacharopoulos generally approached it as a “favored instrument of social engineering for achieving a series of objectives, such as accelerating economic growth, reducing youth unemployment” (p.385). In 2004, UNESCO advanced the prior definition considering VET as based on those characteristics that are typical of the education process and which link to general education processes, scientific and technological approaches useful to gain practical skills, attitudes, and knowledge related to the occupations in various sectors. This implies that VET is central to national socio-economic development, offering potential benefits both for companies and people (Duhu and Mbaga, 2016), contributing to companies competitive and innovativeness thanks to human resources ability in acquiring and using always updated and innovative knowledge and skills essential to face the emerging challenges and changes typical of current globalized markets (Li and Pilz, 2023). Even though the strategic potential of VET, it doesn't come without challenges and issues to be solved, such as 1) the low motivation to participate in these educational initiatives, 2) the resistance of companies (especially the smallest ones) in organizing such initiatives, 3) the lack of personalized education programs and the related methods, and 4) a certain resistance to using digital tools (Anselmann et al., 2022; Yang et al., 2023). These issues are influenced also by the disruptive changes that digital transformation is generating in workplaces and in the job market. Moreover, VET educators and learners as well as companies are often unaware about the potential of digital technologies in offering highly customized education experiences and in improving their quality, attractiveness, and adaptability (Yang et al., 2023). Focusing on the last dimension, it is worth noting that adaptability is an essential feature for VET, because it contributes to make its programs and interventions able to quickly change and adapt to the ever-changing labor market's need. In doing so, smart digital technologies can offer the right support to trainers and companies in innovating and empowering teaching and evaluation methods as well as in updating the related educational equipment and environment (Haasler, 2020). In fact, overcoming technological resistance in VET could contribute to offer more efficient and effective educational experiences, based on the ongoing improvement of pedagogical approaches, also thanks the use of data analytics to better understand participants' educational needs, learning abilities, and behavior to inform personalized learning paths (Muñoz et al., 2022; Haleem et al., 2022).

Drawing on previous considerations, scholars and practitioners are starting to explore the potential of advanced technologies and of Artificial Intelligence on VET enhancement, focusing the need for better recognizing the current barriers and challenges to its implementation.

Purpose of the paper: understanding the potential of AI for improving Vocational Education and Training.

Over the last two decades, the so-called Artificial Intelligence in Education (AIEd) has been at the forefront of policymakers, researchers, and practitioners, who have contributed to its long-lasting development (Roll and Wylie, 2016). AIEd is aimed at offering personalized instruction, and intelligent student assessment, based on collaborative, automated, and predictive practice (Hwang et al., 2020). Research has identified three main trends of AIEd, 1) training with the help of AI, 2) scientific and practical research of AI, and 3) training qualified specialists to work with AI in education (Gegenfurter et al., 2020). It follows that even though AIEd also impact VET, research on the topic is still limited (Chen et al., 2022). Drawing on these considerations, this study is intended to better understand if and how VET actors (teachers, learners, and companies) can recognize and accept the potential of AI on training practices.

AI intended as “an emerging technical science used to simulate and extend human intelligence theory, methods, technologies and application systems” (Li and Wang, 2020, p.591), can boost technological and pedagogical innovations in VET, based on the spread of different applications such as intelligent tutors for content delivery, feedback provision, and progress supervision (Bayne et al., 2020). However, as for other technologies also AI algorithms has caused a certain resistance among VET actors. In fact, the potential of what scholars conceptualized as VET4.0 or those “new concepts, trends, and goals for future VET reform and innovation in the context of digitalization” (Yang et al., 2023, p. 3846) is not so clear to VET actors. It follows that AI implementation in VET scenarios should be supported by specific and new educational and learning theories, to inform and inspire their implementation. This will support VET actors in understanding the adaptive potential that AI can have on education experiences, being able to timely adapt training curricula to the fast changes of demanded skills or to learners' personal and professional traits (Guan et al., 2020). This implies that a better acceptance of AI in VET scenarios should be promoted supporting actors in recognizing their needs, in overcoming social and psychological barriers to technologies use, and in offering them blended online-offline learning environment, designed for offering highly personalized education experiences (Chen et al., 2022). This could enhance

their dynamism and adaptability to the changes occurring in corporate organization, labor markets, and even in society, upscaling the existing curricula and create new specialties or professional specializations (Mahmut, 2019). However, it is worth noting that these hybrid, intelligent, and technology-based learning environments can be developed only when they are informed to current VET teaching and learning issues and needs (Hwang et al., 2020) and the related actors are open and even willing to use AI applications, such as natural language processing, artificial neural networks, machine learning, deep learning, and genetic algorithms (Ouyang et al., 2022).

Research question and conceptual model. The research aims to analyze the impact that the use of AI can have on VET education (impact). Our research question is as follows.

RQ: How much AI technologies impact on VET education of the future?

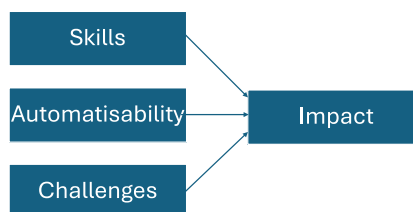
To answer this question, we have analyzed the impact with reference to the following antecedents: 1) degree of automatability/AI of the education tasks (automatability); 2) level of AI-related skills and knowledge already present among the professionals to be trained (skills); 3) perceived difficulty in the change towards greater automation/AI in VET education (challenges). Table 1 summarizes and describes each of the items involved in the conceptual framework (see Figure 1).

Table 1. Questionnaire items

Items	Description	Details
Skills	Current and emerging training needs in relation to the use of AI in the workplace	VET education is expected to need a reconfiguration according to the emerging training needs stemming from the AI implementation in the workplaces
Automatability	The most automated tasks in the context of AI-oriented training	Specific training activities that can be automated using AI technologies
Challenges	The challenges and critical issues of AI-oriented training	Some barriers to the adoption of AI in the workplace may emerge on the firm side and also on the workers side. Critical aspects related to data privacy and ethical use of AI may emerge, together with barriers to the adoption of AI in the VET environment
Impact	The methodologies and resources of AI-oriented training	AI may impact on learning processes, tools and platforms used for training in order to increase participants familiarity with the AI

Source: authors elaboration.

Figure 1. Conceptual framework



Source: authors elaboration

Methodology

Data collection and measurement

The empirical research was based on the collection of primary data through the administration of an open-ended questionnaire. Through the questionnaire, it was intended to collect data relating to the organizations involved in different ways in vocational training processes. Therefore, the questionnaire was administered to different types of institutions, bodies and companies located on Italian territory and involved at different levels in administering VET education and training.

More specifically, the study involves actors operating in the field of education and professional training, institutions engaged in continuing education, and human resource managers. The investigation started in January 2024 and is still ongoing. While writing, 15 complete and usable answers have been collected for the purpose of the study. The research team is currently analyzing the collected data to preliminarily identify trends and patterns in AI and vocational training processes, in order to validate the conceptual model and the measures for the study.

The main issues addressed in the questionnaire concern: current and emerging training needs in relation to the use of AI in the workplace, the most automated tasks in the context of AI-oriented training, the challenges and critical issues of AI-oriented training, the impact in terms of methodologies and resources of AI-oriented training.

The open answers were coded by the researchers, also triangulating with the literature, reporting them on a scale from 0 to 2, to indicate the interviewee's perception with reference to each of the aspects in relation to the phenomenon considered. Table 2 summarizes the measures for each item.

Table 2. Measurements

Items	Measurements
Skills	0 = no changes after AI integration 1 = small changes after the AI integration 2 = relevant changes after the AI integration
Automatisability	0 = no automatisability of the tasks 1 = small automatisability of the tasks 2 = relevant automatisability of the tasks
Challenges	0 = no challenges after AI integration 1 = small challenges after the AI integration 2 = relevant challenges after the AI integration
Impact (outcome)	0 = no changes after AI integration 1 = small changes after the AI integration 2 = relevant changes after the AI integration

Source: authors elaboration

fsQCA – Fuzzy-set qualitative comparative analysis

In this study we will use *Qualitative Comparative Analysis (QCA)* to process the data and answer to the research question. The qualitative data will be coded by the authors in order to prepare the data for the analysis.

QCA is configurational method useful to grasp causal relationships between a set of relevant conditions and an outcome (Ragin, 2010). The method is likely to be applied in both small-N and large-N studies (Greckhamer et al., 2018; Ishiyama & Batta, 2012), and may process both quantitative or qualitative data, as in our case (Pagliarin et al., 2023).

QCA introduces the configurational perspective to explain causal complexity, which social phenomena have in common (Misangyi et al., 2017). Three aspects are crucial to adopt the configurational approach: equifinality, conjunctural causation and asymmetry. Equifinality is the idea that different combinations of conditions can lead to the same outcome. Conjunctural causation emphasizes the importance of the interaction between conditions in determining the outcome. Lastly, causal asymmetry suggests that the attributes sufficient for the outcome to occur are not merely the opposite of those sufficient for the outcome to not occur (Ragin & Rihoux, 2009; Woodside, 2014).

In QCA, cases are conceptualized as combinations of relevant attributes, called conditions. The method is rooted in Boolean algebra so that each case membership in each one of the conditions is properly measured and then calibrated in a range between 0 and 1. There are different ways to calibrate the data in fsQCA. Since there are not any external criteria available, we use the internal distribution of cases to calibrate by looking for discontinuities (Schneider & Wagemann, 2010). According to that we identify the qualitative anchors associated with the full-membership, the full non-membership and the cross-over point (Tóth et al., 2015).

Thanks to fsQCA it is possible to understand if there are causal relationships between the conditions and the outcome. After calibration, we build the truth table, which contains all the possible combinations of attributes and outcomes and the associated cases. After processing the truth table, by defining the consistency and frequency thresholds according to the literature (Ragin, 2008), and by using specific software, the logical minimization allows to identify necessary and sufficient conditions for the outcome to occur (Dusa, 2019; Hlavac, 2022; Oana & Schneider, 2018). More specifically, necessary conditions may be defined as those attributes that are always present when the outcome occurs, while sufficient conditions are those attributes that, when present, always lead to the outcome (Fiss, 2011).

Results. Even though our empirical research is still ongoing, we therefore report here some preliminary and some expected results.

Our preliminary data indicate that there is a growing demand for AI-oriented training in VET education. This suggests a growing recognition of the importance of AI skills in these sectors and the desire to incorporate AI-related training into their programs and operations. This happens both for the teachers and the trainees, who have respectively to master AI while teaching and be aware on how to effectively use AI in their workplaces after getting familiar with it thanks to the training activities.

Antecedents such as the degree of automatability/AI of educational tasks, the level of AI-related skills and knowledge among professionals, and the perceived difficulty in transitioning towards greater automation/AI in VET education provide valuable insights into the transformative potential of AI in this domain.

Skills

The level of AI-related skills and knowledge already present among professionals who are being trained plays a pivotal role in shaping the effectiveness and successful implementation of AI within VET training. Educators need to be equipped with AI skills to effectively incorporate technology into their teaching methods, personalize learning experiences, and prepare students for the future workforce. On the other hand, trainees, including students and

professionals, need to develop AI skills to stay competitive in the job market, under and the potential applications of AI in various industries, and contribute to the advancement of the technology.

Automatability

Some of the training tasks performed in VET education appear to be much more affected by AI integration in VET education. More specifically, the learning environment may be automatized with reference to faster design of curricula and courses and development of teaching materials, increased productivity for the execution of training tasks.

Challenges

The integration of AI tools in education have recently been analyzed by management scholars (Ali et al., 2024). The critical aspects identified concern:

1. *Users:* in relation to the need for personalization of educational content, which generalist AI tools (e.g., generative artificial intelligence tools) may not be able to provide
2. *Operations:* with regard to the concrete capacity and possibilities, including economic ones, of current training systems to incorporate artificial intelligence tools, to manage and maintain them appropriately
3. *Environment:* in relation to the increased use of electronic tools that impact the environment (in terms of electricity and water needs) during use and also in relation to the disposal of electronic devices at the end of their useful life
4. *Ethics:* related to the biases that artificial intelligence tools could have based on the data with which they have been trained, regarding issues of minority inclusion, and equality.

Impact

One of the key aspects to consider when analyzing the impact of AI on VET education is the potential influence it can have on teaching methods and learning processes. With the integration of AI, there is a possibility for personalized teaching approaches that cater to individual student needs, thereby enhancing the overall learning experience. Additionally, AI can play a significant role in automating administrative tasks (Zouhaier, 2023). More specifically, among the others, these aspects emerge from our preliminary responses: 1) using AI as a study companion or a mentor, to generate ideas and advice, as a tutor to evaluate what they have written or thought and give advice on how to improve the product, in simulations to invite them to think as an actor in the context of an interaction and asking artificial intelligence to play another role in the simulation; 2) using AI as tools to support the design and delivery of lessons, for example through the processing of large volumes of data for the understanding of trends related to training needs and the labor market, for the personalization of study paths, or through the development of simulation scenarios to be used in the classroom or more generally of teaching material to support lessons.

Managerial implications. This work offers interesting implications both for theory and practice. Thus, on the one hand, it contributes to the research on VET and its recent evolution, due to the effect of the digital revolution and the implementation of advanced technologies, such as AI algorithms. In particular, it contributes to the research on the innovative potential of AI for advancing and personalizing VET pedagogical approaches, thanks to a better understanding of learning and working needs, as well as of the main characteristics that are required by VET actors to AI-based solutions (Marshall and Sankey, 2023). On the other, it offers also interesting insights to policymakers, education organizations, and companies. VET programs and the demand for updated professional skills are currently among the main concerns of policymakers, due to their central contribution to the development and competitiveness of each country. Even though the empirical analysis has offered just preliminary findings, they have pointed out the needs for a more informed cooperation between VET actors and for more effective literacy programs promoted by policymakers and intended to contribute to overcome the resistance to technologies that often still characterize VET teachers, learners, and the interested companies. These actions will also benefit the definition of flexible educational strategies and actions able to promote an adaptive approach to VET intended at creating personalized and autonomous pedagogical and learning systems (Osadcha et al., 2020; Huang et al., 2021). This seems to be even more essential if related to the disruptive changes occurring in the labor market at a global level (Baumeler et al., 2021). However, in doing so collaboration is essential; thus, policymakers should be open and ready to collaborate with education organizations (and teachers) as well as with companies and single learners, recognizing and harmonizing their wants and needs.

This work has also some implications for education organizations; thus, it offers guidance for exploiting AI potential in terms of recognizing and offering learning services in line with the current requirements, working both on pedagogical approaches and on teachers/trainers' competence and openness to the use of advanced technologies (Attwell et al., 2020). In fact, the achieved results can support these organizations in rearranging VET learning protocols, curricula, and interaction processes.

Finally, results offer some implications also for business companies, focusing on the importance of changing the approach to continuing training and of being more open to the use of technological solutions, such as AIEd, for aligning professionals' knowledge and skills to the current business scenarios, making people able to respond to the demand for advanced digital and technical skills (Marshall and Sankey, 2023). This implies that companies should be more open to investing not only in VET strategies and programs but also in digital technologies literacy to be open to advancing those programs towards better use of AI.

Originality of the paper. *The originality of this work lies in the attempt to contribute to bridging the gap in the existing literature about the international and national evolution of VET, focusing on the role that smart digital technologies, such as AI, are playing in it. In doing so this paper represents one of the first contributions to quantitatively assess if and how educators are open to using AI solutions in VET programs. Moreover, this contribution provides empirical evidence that contributes to the lively debate about the “digital evolution” of VET, supporting VET educators in enhancing the learning/training experience through AI to make it as in line as possible with the needs of VET students.*

Research limitations. *Even though the interesting insights, this work does not come without limitations. The main of these are related to the limited sample and to the fact that the survey has been conducted just in the Italian VET scenario. Consequently, a more extensive survey, both at the national and European level, will make it possible to compare the Italian approach to the use of AI in VET with the approach and trend of other European countries. This is essential not only to make the findings more generalizable but also to open further research aimed at better understanding how to improve the interaction between students and educators using the right and more effective way AI tools dedicated education.*

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AI-Powered Marketing Communication: Exploring Strategies in the Luxury Furniture Industry

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Abstract

Artificial intelligence (AI) forces communication and marketing managers to improve their skills, competencies, and capabilities to understand and adopt this innovative tool. Because of its capability to perform various data-based activities faster than humans can achieve them, AI appears to be a game-changer tool for marketing communication strategies. However, despite the global awareness that AI is receiving today and its increasing introduction in marketing communication processes, marketing and communication managers' perceptions, attitudes, and utilization are still underexplored. Therefore, the research aims to investigate marketing and communication managers' attitudes and behaviors toward introducing AI. The study adopts the Social Cognitive Theory of Organizational Management to understand the impacts of cognitive, behavioral, and environmental factors on the marketing and communication managers' intention to use AI at work. The analysis focuses mainly on managers operating in the luxury furniture design sector, which, while on the one hand, is frequently using AI for communication and marketing purposes, on the other hand, has not been previously explored. The research adopts a qualitative approach, and data are collected by conducting in-depth interviews with marketing and communication managers of luxury Made in Italy furniture design companies to achieve its objectives. The focus on Made in Italy organizations is supported by the sector's relevance and global recognition, which ensure the opportunity to provide managerial and policymaker-oriented implications. Although the study is still in progress, the findings will allow us to obtain a comprehensive overview of AI integration toward marketing communication strategies in luxury Made in Italy furniture design managers' processes and activities to provide theoretical implications to advance knowledge related to the use of AI by marketing and communication managers.

Key words: artificial intelligence; marketing communication; luxury; furniture design; made in Italy

Framing of the research. Since 1991, the year the Internet was introduced, marketing communication has changed significantly (Rowley, 2004; Shankar et al., 2022). For example, social networks and blogging platforms have fostered a two-way relationship between brands and consumers through real-time interaction (Kim et al., 2021). In addition, technologies' ability to track consumer behavior has allowed companies to build databases and provide hyper-personalized communications by creating user profiles (Varnali, 2021). Managers could listen to consumers and implement or adjust their marketing communication strategies using an integrated approach (Eriksson et al., 2020). Moreover, the availability of multiple digital touchpoints has increased the need for marketing and communications managers to manage integrated marketing communications coherently to provide consumers with consistent content and information (Rehman et al., 2022). Artificial intelligence (AI) has recently been determining new transformations and opportunities for marketing and communication managers to create and deliver integrated marketing communication strategies (Vlacic et al., 2021), and to date, AI is changing the marketing paradigm (Davenport et al., 2020).

AI refers to "machines that mimic human intelligence in tasks such as learning, planning, and problem solving through higher-level, autonomous knowledge creation" (De Bruyn et al., 2020, p. 93). In other words, AI is evidence of the intelligence that machines demonstrate through specific actions (Shieber, 2004). A machine action is considered "intelligent" if it performs tasks that, if performed by a human, would be considered intelligent. In this sense, intelligence consists of learning processes, planning, or problem-solving methods faster than humans because of its capacity to analyze and elaborate enormous sets of data (Xu et al., 2021) and in the ability of machines to demonstrate creativity, logic, and critical thinking, among other things, and thus support entrepreneurial action (Bruyn et al., 2020; Russell and Norvig, 2016).

AI has proven to be a vital tool for revolutionizing marketing strategies (Davenport et al., 2020), enabling companies to adapt their business models, streamline sales processes, improve customer service, and understand customer behavior

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more comprehensively. The innovation of marketing strategies through AI is possible through three main thrusts (Sjodin et al., 2021): (a) the ability of AI to collect data and present it in a structured way — quality and quantity of data have a direct impact on the outcome; (b) the ability of the organization to develop algorithms that can provide insights (based on processed data) for potential future business actions aimed at solving problems or making progress; (c) the company's ability to democratize AI to make AI accessible to everyone in the company by involving the workforce in identifying and experimenting with valuable applications to improve activities. For instance, AI can help marketing and communication managers communicate correctly with consumers (Eriksson et al., 2020), making their organizations agile (Chatterjee et al., 2021).

Huang and Rust (2018) distinguish four types of AI intelligence: mechanical, analytical, intuitive, and empathetic. Mechanical intelligence is the ability to perform repetitive and routine tasks automatically. Analytical intelligence involves processing information to solve problems and learn from it. Intuitive intelligence means thinking creatively and adapting effectively to new situations that require insight and creative problem-solving. Finally, empathic intelligence refers to recognizing and understanding others' emotions, responding appropriately, and influencing others' emotions. The authors suggest how each level of AI intelligence could replace human labor and activities. However, while many activities could be replaced by AI - such as customer support, where an AI-based chatbot can provide consumers with information and details (Mariani and Borghi, 2023) - others (such as marketing and communication) can benefit from the introduction of AI into processes and activities (Mariani and Dwivedi, 2024).

AI enables marketing managers to analyze and use data in novel ways, which helps them make informed, strategic, and rational decisions (Eriksson et al., 2020). For instance, AI allows managers to understand when, where, and how to deliver a message to a precise audience to optimize budget and increase results (Huang and Rust, 2020). Also, AI can help marketing and communication managers create, revise, or proofread messages and content delivered through multiple channels (Chintalapati et al., 2021). Additionally, AI might simplify marketing and communication managers' activities and processes, reducing the effort required to achieve, among others, repetitive tasks and actions (Huang and Rust, 2018). As proof of that, AI tools available to marketing and communication managers are becoming increasingly numerous and specialized (Ippen, 2024; Sabaliauskiene, 2024). Also, especially on social networks (e.g., TikTok), there is a growing abundance of videos and tutorials explaining how to utilize AI to support various activities, ranging from streamlining processes to crafting entire marketing and communication campaigns (Dudekula, 2023). Therefore, managers might adopt AI because of personal or contextual factors (Sharma et al., 2023). Given the subjective and contextual elements that might influence managers, the current research adopts the Social Cognitive Theory of Organizational Management as the theoretical lens for understanding why marketing and communication managers behave toward AI.

The Social Cognitive Theory of Organizational Management (SCTOM), developed by Wood & Bandura (1989) based on Bandura's Social Cognitive Theory (SCT) (1977, 2023), assumes that personal factors contribute to the dynamic transaction in the management of organizations and to managerial decisions and performance. The causal interactional structures among the interactants, behavior (B), cognitive and other personal factors (P), and the external environment (E) are the determinants of managerial decision-making in dynamic environments. Each interactant in the triadic causal construct that the authors identify functions as an essential and constituent part of the organizational process (Bandura, 1988). Three aspects of SCT are specifically relevant: (a) the development of people's cognitive, social, and behavioral skills through mastery modeling; (b) subjective beliefs in personal abilities to use their talents effectively; and (c) the enhancement of individual motivation through goals.

This theoretical approach appears particularly relevant to integrating AI into decision-making processes, where cognitive, behavioral, and environmental factors influence managers' decisions, self-efficacy perceptions, and performance outcomes. Recent studies have revealed that acceptance or rejection of AI results from a multi-stage evaluative process in which the result is expressed along two fronts: acceptance or rejection of AI. Fronts that, despite traditional models, should not be considered oppositional constructs but rather the expression of a specific rejection of AI and not of the technology in absolute terms (e.g., Gursoy et al., 2019; Lin et al. (2024).

To date, and to the best of our knowledge, no research has studied managers' perceptions and orientation toward integrating AI into communication-related decision-making processes. This paper aims to help fill this knowledge gap. In particular, there is a lack of knowledge regarding the perceptions, intentions, and behaviors operating within communication and marketing, especially in the luxury sector, in which these professionals are requested to create a "dream" in consumers' minds (Chandon et al., 2016).

The use of AI for marketing communication strategies is particularly relevant in the luxury sector (Oc et al., 2023), where AI can optimize the definition and delivery of communication marketing strategies (Nieves, 2024). Nieves (2024) notably reports how luxury brands can use AI to optimize operations, create exclusive experiences by tailoring unique activities for each consumer, and measure customer satisfaction, loyalty, and engagement through specific real-time metrics. In this context, after using AI to analyze consumer comments and reviews on YouTube about luxury fashion products, Oc et al. (2023) emphasize how managers can use AI to create new content and target new segments by redefining their campaign messages based on the processed data. Despite this evidence, analyzing the perceptions and attitudes of marketing and communication managers toward integrating AI into their practices and activities is still scarce.

Managers from other luxury sectors, such as luxury furniture design, have integrated AI into their creative processes (Salone del Mobile.Milano, 2023). Natuzzi, an Italian furniture design brand in the luxury market, has used AI to improve the online customer experience and tailor product recommendations to individual preferences (Microsoft, 2021). The

brand published a post on Instagram (see Figure 1) stating: “Through artificial intelligence and the help of @joooo.ann, we have been able to enter new and unexplored worlds, showing our Puglia in a surprising light and making comfort an almost visible and tangible sensation.” In other words, AI seems to support Natuzzi’s communication in creating and delivering communications to consumers. However, how professionals perceive and behave towards AI to develop and manage their communication marketing strategies and how AI helps or threatens them in communicating with consumers is even less studied.

Despite the numerous benefits highlighted, the use of AI can lead to substantial changes in organizational terms and internal processes (Langer and Landers, 2021). In fact, while there is an expectation of greater effectiveness and efficiency in both analysis and marketing communication planning, the use of AI requires a review of organizational processes and workflows, as well as the acquisition of new skills by the professionals who will adopt it (Tschang and Almira, 2021). However, research aimed at understanding the changes brought about by AI in the practices of marketing and communication managers is still limited. Therefore, this study investigates managers’ perceptions, behaviors, motivations, and environmental influences toward implementing AI in and for marketing communication strategies and campaigns adopting the SCT.

The study adopts a qualitative approach, focusing on Made in Italy companies in luxury furniture design. The decision to focus on managers in Made in Italy enterprises stems from three primary motivations: (a) the expansion of luxury furniture design exports, which increased by 13.4% in 2022 compared to the previous year, leading to a sector sales volume of 1.9 billion euros (Intesa Sanpaolo, 2023); (b), the strong tradition of Italian enterprises in creating high-quality luxury furniture design product (Codignola, 2018), and the global appreciation and awareness of the Made in Italy luxury furniture design (Future Classics Furniture, 2023); and (c) national institutional investments towards the digitalization of Made in Italy sector enterprises, aimed at fostering the adoption of new technologies and promoting innovation (Ministry of Enterprises and Made in Italy, 2024). Additionally, Made in Italy companies are known for their strong identity and pronounced creativity; thus, the study of AI by marketing and communication managers within these organizations represents an original lens through which to interpret the phenomenon.

Figure 1 – Instagram post by Natuzzi, January 20, 2024
Original post: https://www.instagram.com/natuzzi/p/C2VJxWHOYLO/?img_index=1



Purpose of the paper. Based on the above background, the study aims to understand how communication and marketing managers perceive AI and how they deal with this technological tool. The study focuses on managers working in the luxury furniture industry. Therefore, the research seeks to understand managers’ perceptions about the benefits and risks related to the introduction of AI in defining and creating marketing communication strategy; attitudes, exploring their beliefs, concerns and expectations, motivations for adoption, and implications of organizational, work processes and skills needed for the introduction of AI.

Methodology. Given the exploratory essence of the research, the current research adopts a qualitative approach. Marketing and communication managers will be considered key informants for the study (Barker et al., 2005). The authors will select those respondents who are (a) employed as marketing or communication managers in a luxury furniture design enterprise based in Italy and (b) involved in defining the marketing communication strategy for their companies.

The data collection will be assessed by conducting in-depth semi-structured interviews. In-depth semi-structured interviews let researchers obtain relevant information related to respondents’ experiences and perspectives (Leavy,

2020). According to the SCTOM theory, the semi-structured interview outline will investigate the three interrelated factors (Behavior, Cognitive and other personal factors, External environment) underlying the causal interrelationships of managerial decisions.

All in-depth interviews will be conducted in Italian through digital video call platforms (such as Google Meet or Zoom). The choice of using digital video call platforms is justified by two main reasons (Irani, 2019): (a) the ability to interview managers from different geographical areas than the researcher; (b) the greater flexibility offered by digital platforms in scheduling interviews; and (c) the platform's capability to record audio after explicit consent for recording is obtained from the interviewee. Each interview will be transcribed using software and subsequently checked by the authors for content accuracy. Then, each author will proceed with manual coding (Saldana, 2021) to identify the main themes and connections among them (Braun and Clarke, 2006).

Results. The research is still in progress. We are currently experiencing a period when AI is gaining global attention for its rapid development, drawing the interest of scholars and practitioners seeking to capture its implications, advantages, and disadvantages. Through this exploratory study, we expect insight concerning attitudes, expectations, and influences managers perceive and face when adopting and integrating AI into their practices to define and implement communication strategies. With our research, we expect to contribute to the discussion of AI and analytics in the management context (e.g., Kanbach et al., 2023), demonstrating how SCTOM can be adopted to investigate AI adoption.

Research limitations. Like other research endeavors, this study exhibits certain limitations that, on the one hand, efforts will be made to mitigate during the research process. On the other hand, they may serve as starting points for future investigations.

Firstly, the study aims to understand marketing and communication managers' integration of the inclusion of AI for defining and implementing marketing communication strategies in luxury furniture design companies labeled as "Made in Italy." Despite the increasing adoption of AI in businesses worldwide, Italy shows a positive trend of AI inclusion, primarily among large enterprises (6 out of 10 have at least one active AI project). In contrast, only 2 out of 10 small and medium-sized enterprises integrate AI (Osservatorio Artificial Intelligence, 2024). Consequently, the research might focus on managers working in large enterprises. Researchers will attempt to limit the effect of this limitation during the data collection process.

Secondly, the research analyzes the Italian context, considering the global appreciation for furniture designed by Made in Italy organizations. Therefore, the study focuses on this geographical and cultural reality. Consequently, the results may not align with managers operating in other European or non-European territories.

Thirdly, when writing the current manuscript, the European Union approved the AI Act, thus becoming the first organization globally to impose regulations on the use and dissemination of AI (European Commission, 2024). Therefore, many of the activities conducted by managers up to this point may experience some slowdown due to the need to comply (if necessary) with the regulations. Hence, the study may reflect a transitional situation, and future research may adopt a longitudinal perspective to analyze any repercussions resulting from regulation.

Finally, the research is qualitative, characterized by data collection based on in-depth interviews with managers. The qualitative nature of the research does not favor the generalizability of the results. Therefore, future research may adopt the results for questioning to confirm their validity.

Managerial implications. The study aims to offer a series of significant implications for professionals across various sectors. Firstly, it seeks to understand the perceptions and attitudes of communication and marketing managers in the luxury furniture design sector of Made in Italy toward AI. This will provide top management and entrepreneurs with a framework to identify areas for improvement or challenges to maximize the benefits of AI adoption within their organizations. Secondly, the investigation aims to provide AI service providers and developers with necessary insights into the current usage of AI within luxury furniture design enterprises of Made in Italy. This will enable them to pinpoint areas where they can offer enhanced solutions or new services to meet clients' needs in marketing strategy. Finally, the analysis aims to provide Italian institutions and policymakers with an overview of the current AI usage among managers of Made in Italy luxury furniture design enterprises to identify actions that can promote their growth and innovation within the context of the digitalization of the Italian economy. These implications are crucial for fostering progress and competitiveness in the Italian luxury furniture design sector, considering the Italian government's effort to promote Made in Italy productions (Ministry of Enterprises and Made in Italy, 2023).

Originality of the paper. The study is among the first to focus on how marketing and communication managers in the luxury furniture design sector perceive and behave toward AI for defining, integrating, implementing, and activating marketing communication strategies. Specifically, the research seeks to depict and adopt the SCTOM theory, the current state of AI adoption, and how this tool fits into the activities of marketing managers and all parties involved in defining marketing communication strategy. Therefore, in theoretical terms, the research aims to advance knowledge regarding the relationship between AI and marketing and communication managers; in managerial terms, it aims to provide precise guidance by creating a toolbox immediately usable by managers.

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Artificial Intelligence in SCM: insights from two illustrative cases

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Abstract

Artificial Intelligence (AI) and Supply Chain Management (SCM) have gained increasing attention in the last few years. Many literature review papers address the issue and highlight the importance of deepening the interplay between AI and SCM. The different contributions offer together a double faced picture of such interplay. On the one hand the opportunities stemming from AI applications in SCM are emphasised. On the other hand the future of such applications has still undefined contours and poses important challenges. In this work-in-progress paper we try to analyse this ongoing scenario from the perspective of two firms engaged in the introduction of AI in two different positions in the Supply Chain (SC). The main aim of this paper is explorative and is that of understanding the main constraints and opportunities that a firm meets when it attempts to integrate an AI tool in the context of a bundle of resources (both tangible and intangible) that have been already settled for a specific purpose. Notably, we assume that AI is not in a vacuum and AI applications require an integration with other resources in the company's SC, in order to exploit its potential and to limit possible negative effects on the overall performance. From this perspective, the two cases offer interesting insights that will constitute the basis for the refinement of the research design and for the framing of more specific and bounded research questions in such a domain.

Key words: AI; SCM; CRM; IoT; Operations Management

Framing of the research. *SCM is a comprehensive term that encompasses the end-to-end management of processes involved in the production and delivery of goods and services along the SC. It includes the coordination and integration of various activities, including procurement, production, transportation, and distribution, to create value for the end consumer. In particular, SCM embraces activities related to both physical and information flows, together with the alignment of organisational and network dynamics (Stock et al., 2010). Therefore, the primary aim of SCM is to coordinate, monitor, and control processes to achieve integration (Power, 2005; Kaufman, 1997).*

The advent of Industry 4.0 (I4.0) has pushed transformative changes in SCM, leveraging advanced technologies such as the Internet of Things (IoT), big data analytics, or automation. Companies have now the chance to exploit the application of I4.0 technologies to SCM in order to achieve a series of benefits, including increased visibility and transparency among actors, enhanced data-driven decision-making processes, optimised operations, warehousing, and logistics, and more collaborative SC networks (Seyedghorban et al., 2020; Kache & Seuring, 2017).

One notable area of impact is the integration of AI into SCM processes. Such technology can be defined as “a field in computer science encompassing the development of systems capable of performing tasks that normally necessitate human intelligence” (Pournader et al., 2021:2). Therefore, AI in the context of SCM refers to the use of intelligent algorithms and machine learning to enhance decision-making, optimise operations, and improve overall efficiency within the supply chain. Given the substantial potential that AI encompasses in terms of improving operations along the SC, together with collaboration and overall performance, business companies are showing interest in the topic, which also constitutes a flourishing research stream (Toorajipour et al., 2021).

Available literature on AI and SCM shows how this research topic is wide and can be faced through various lenses and focal points. Just to provide some examples, Toorajipour et al. (2021) address the main benefits of AI in the SC and highlight the operations and tasks that are more likely to be further improved in the next future. Helo and Hao (2022) embrace the topic from the business model perspective, empirically investigating the AI-based digital transformation of four case companies to identify the main areas of value creation in the SC. Similarly, the work of Sharma et al. (2022) presents an overview of AI- and SCM-related literature to unveil some crucial research clusters, including network design, supplier selection, inventory and demand planning, and green practices.

Despite the growing attention to AI in SCM literature, there remain open points that warrant further investigation, as underlined in all the above-mentioned studies on AI and SCM. Future research streams include - but are not limited to - the exploration of how AI can support SC integration, the synergies that could arise from the combination of AI and other I4.0 technologies such as Industrial IoT or Blockchain, the potential application of AI for logistics optimization, the

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impact of AI in the network orchestration, especially where interactive decision-making processes are activated, the combination of AI with Big Data Analytics and CRM system (Toorajipour et al., 2021; Ledro et al., 2022). Areas of interest also extend to the deeper understanding of the contribution that AI can bring to SC capability and competitive advantage (Pournader et al., 2021), as well as to SC resilience, knowledge-building, and performance (Sharma et al., 2022).

In particular, this explorative research undertakes what Richey Jr. et al. (2023) indicate as the 'Level 2' in their framework for researching AI in the SC: discovering the challenges and benefits of AI to SCM in terms of practices and processes. This level of analysis underlines the need for future research addressing how AI modifies internal SCM processes, including reconfiguration, innovation, and decision-making, as well as collaborations and coordination within external relationships.

Taking a more micro perspective on the studies in this context, it emerges that many companies are focusing on optimising isolated parts of their processes through the specialistic use of AI, leading to integration challenges and short-term vision limitations within the SCM framework. Despite a diffused silo-thinking approach and modest investments in AI - mainly to adapt to evolving market dynamics, the necessity of reevaluating long-term AI-based integration strategies is emerging. This necessity is clearly underlined from the international consultancy agency Accenture, which poses the attention on how properly addressing AI means "approaching generative AI not merely as the latest in a long line of software implementations, but rather as an enterprise transformation, with a clear focus on end-to-end business capabilities and implications for areas like data, people, ways of working, processes and responsible adoption" (Rey-Marston & Lagunas, 2024:4). Such integration efforts are pivotal to achieve enhanced efficiency across the overall SC, paving the way for a more sustainable competitive advantage. In this perspective, resources acquire a great role in leading the AI-driven transformative change (Chen et al., 2022). Embracing a holistic approach to the analysis of the resources involved in the overall process can be of help in overcoming the silo-thinking approach in favour of a more integrative view.

Therefore, the present work seeks to contribute to the existing body of knowledge by focusing on the intersection of AI with two activities upper and lower in the SC: operations management - meant as internal logistics - and Customer Relationship Management (CRM). The goal is to shed light on unexplored aspects and offer insights into the evolving processes underlying SCM in the context of AI-driven advancements.

Purpose of the paper. The main objective of the paper is to explore the problems and opportunities of integration of AI in the SC when other resources interact with AI - and each other. Specifically, the paper aims at understanding the main constraints and opportunities that a firm meets when it attempts to integrate an AI tool in the context of a bundle of resources (both tangible and intangible) that are already settled for a specific purpose in the SC. Notably the two cases are focused on two different AI applications in two different positions in the SC (mainly centred on operations management). The overall aim of this contribution is to achieve a clearer definition of specific RQs and at a refinement of the whole research design.

Methodology. The paper is in its seminal phase of development. Here we offer two illustrative cases developed with a qualitative approach and data collected from different sources: first sources of data are explorative direct interviews and already collected data for other research purposes in each of the two companies; secondary sources are constituted by the analysis of internal company's documents, company's websites, press releases. The first case of Alpha (a medium-large furniture manufacturer) shows the first steps of a project of implementation of AI in the optimization of the maintenance, problem fixing and problems reporting (ticketing) processes of the whole production plant in the core production facility. Alpha has the main objective of making the most by data stemming from the different machineries (IoT) and other sources (opening of tickets by operators with QRcode technology) conveying in a centralised dataset and managed by an ad hoc software developed in interaction with a partner (supplier). The second case of Beta (a large manufacturer) is about the adoption of AI in the CRM system of a company in the mechatronic sector. Beta has the main objective of exploiting AI to support customers that require assistance by providing automatic answers and teaching customers how to solve specific problems without the need of a technical intervention. An AI tool is integrated in the CRM system to access a set of technical documentation and provide customers with personalised feedback. Not only, AI is also adopted within the CRM to facilitate and accelerate the desk activities of assistance contact centre operators.

In the data analysis process we rely on the Resource Interaction (RI) approach developed by IMP (Industrial Marketing and Purchasing Group). In particular, the RI perspective highlights the interactive nature of resources and emphasises the potential (and value!) of a resource "only" in interaction with other resources (Baraldi et al., 2012; Bocconcelli et al., 2020); RI framework has been often used in IMP-related literature to deal with the complexity of technological development in a networked context (Chou & Zolkiewski, 2012; Håkanasson & Waluszewski, 2002).

Taking into account the assumptions of the RI and related analytical frameworks (Prekert et al., 2022) allows us to disentangle the complexity of the interplay between AI and SCM. In particular, we claim that by analysing AI as a resource that needs to be exploited in interaction with other resources (other digital resources as well as other tangible and intangible resources) can offer a more real picture of the process of implementation of AI that, in our view, could present a variety of multifaceted "dark sides" that are mostly neglected by literature and managers.

In the future development of the research we will rely on a qualitative approach and on the IMP RI framework, too, in order to address the RQs that will stem from this preliminary analysis.

Results. Illustrative case one: Alpha and AI in the optimization of maintenance and interventions in the production plant. Alpha is a manufacturing company in the furniture production sector, located in central Italy. Alpha has known a huge development in the last ten years both from a market perspective and a technological perspective. Taking the latter,

the company made huge investments in the last years and reorganised the whole production processes and logistics. A new and advanced factory has been settled up which constitutes the productive lung of the whole production. The factory is made up of two integrated and highly automated plants: one with a more flexible “vocation” the other one characterised by high volumes and standardised components (for a high variety of products range and lines). The machineries in the two plants are highly automated and robotized (especially in the “flexible” one) and equipped with sensors, IoT technologies and digitised workstations for operators. The investments in the production plants are constant and incremental, with solutions introduced in different times in the very last years mainly addressed to implement I4.0 solutions. In the last year the company faced the issue of optimising machinery maintenance procedures, and problem signalling and resolution processes. The different machineries and the two plants are handled by a central management software developed by a partner supplier. The software collects and processes data that comes from different sources: IoT sensors, control units of CNC machines, operators’ reports on the functioning of plants and machineries based on QR code and mobile technologies, and other management software systems.

A huge amount of data needs to be handled and, most importantly, AI seems to offer the opportunity of making a more integrated use of it. The Director of Production of Alpha, together with the software supplier, proposed to the CEO to start a project of AI introduction to overcome inefficiencies met in the last year due mainly to the overhead of information to be handled and processed in order to promptly solve (and anticipate) production problems. Another motivation pushes the Production Responsible to sponsor the AI project: that of using in a more effective way the different data collected and processed; in his view, AI applications could contribute to exploit the value of data beyond operations management efficiency, for example in relation to supplier management and/or market management. But this is another story; in fact, since the beginning of the project it appears clear that the only introduction of AI in the optimization of the operations in the process of maintenance and controlling of the production plants was per se an enormously ambitious project. In fact, from a first analysis conducted by Alpha and the software supplier it emerges the difficulties to clearly map the prerequisites and trace the scope of the project, due to the variety of resources in play.

The project has been thus limited to two main interrelated and sequential outcomes: a) the use of AI applications for the “tickets’ normalisation”; b) the use of AI for suggesting a solution to the problem “opened” by a ticket by an operator or signalled by IoT and workstations. In relation to the first objective Alpha has the problem of standardising the language used by operators in the problem signalling in a specific area of the user’s interface system. Each human (operator) used so far natural language in this process to describe the problem. And, of course, each operator had his/her way to describe it. The result is a huge variety (both intra- and inter-personal) of describing the same problem and of problems signalled. The idea is to use AI (i.e. Large Language Models - LLM) for communicating in a standardised way the signalling of the problem. This (simple) objective is taking a considerable amount of time for being defined, designed and implemented because it involves: i) the “normalisation” of the Alpha dataset; ii) the analysis and refinement of the dataset to be used for AI training; iii) the selection of AI tool available in the market (ChatGPT by OpenAI or Gemini by DeepMind-Google or Llama by Meta, only to make some examples) and the use of the relative API (Application Programming Interface) that could “dialogue” with the management software and the AI tool; iv) the involvement of operators.

The first objective is apparently necessary for the second one (AI suggesting a resonated list of solutions for the problem), however some analysis has been already conducted in relation to the possible resources involved in the second step. A first problem here is linked to the fact that in this case, AI tools available in the market are very few and most of them do not fit for the specific purpose and it seems, right now, that an ad hoc AI program should be developed with the collaboration of the supplier.

Alpha, soon realised that the project cannot be conducted alone, and asked for the collaboration of the local University, Department of Computer Science. The idea is to apply for a regional funding call with a large partnership involving the University, the partner supplier and other companies in the Region.

Illustrative case two: Beta integrating AI in CRM. Beta is a prominent mechatronic company specialising in the global production and distribution of industrial woodworking machinery. In 2016, the firm invested in a Digital Servitization business model by integrating advanced digital services into its offering through the adoption of the IoT technology. A portion of Beta’s revenue is derived from selling such digital services.

Since 2008, Beta has employed a customised CRM system to meticulously manage customer-related data. This highly tailored CRM is organised in two areas - Sales and Services - and provides valuable information to both sales representatives and service assistance experts. Via the CRM system, Beta can access key information and KPIs on customers, answer assistance calls from them, plan technical interventions both remotely and on site, and much more. Notwithstanding its efficacy, the current utilisation of the CRM system poses challenges due to an intricate assistance workflow, propelled by a considerable customer base and human resource constraints in the Service department. Indeed, to properly work with the CRM, a consistent effort is required in terms of employees; the CRM simplifies some activities while necessitating continuous human supervision and activity.

In response, Beta has initiated a project to incorporate AI into its CRM system. The project entails two expected outcomes. The first is a visual box in the CRM dashboard that operators can access in real-time to support the telephonic assistance flow and improve market analyses. The second one is the creation of a chatbot that customers can access via the log-in into the IoT application, which is able to send customers text answers, technical files, or registered videos indicating the solution to the problems they raise. Therefore, several applications of AI are requested to comply with the project: Vision, Speech Recognition, Natural Language Processing, and Planning & Scheduling (according to the

taxonomy proposed by Pournader et al., 2021). The AI integration aims to expedite response times, address technical issues proactively, and minimise the need for on-site interventions, thereby enhancing overall efficiency and efficacy.

Despite the potential benefits of AI implementation, Beta is encountering some challenges along the way. A first problem concerns the difficulties in connecting two different AI systems - coming from different providers - into the CRM platform. Indeed, the aim of Beta to create two interfaces based on AI, one within the CRM for internal purposes and one within its digital channels to communicate with customers, has led the firm to adopt separate AI technologies. In particular, for the CRM add-on tool, Beta is negotiating with the CRM provider itself, which recently developed an AI-based module to be used within the platform. For the chatbot, instead, Beta is collaborating with a small start-up providing AI models. The main difficulty resides in the fact that the dataset needed for both AI technologies should be organised based on the requirements of the AI providers, while guaranteeing their interface in the CRM platform linked to the cloud.

A second challenge that Beta is facing, strictly linked to the previous one, regards the development of a proper knowledge base, with a specific structure that satisfies the requests of the AI providers. To work properly, both AI for the CRM add-on tool and for the chatbot should source information from a coherent and organised database. The need for a structured documentation system is posing a significant hurdle for Beta, especially considering that until now the firm left to each technical expert the responsibility to create and manage his/her own dataset of information. This means that the existing technical documentation contains different typologies of files with various personal styles and without any formatting or content constraint. Even though Beta planned a documentation revising activity while designing the AI projects, it has definitely underestimated the number of human resources, time, and effort needed. Only two people were initially dedicated to this activity; this is not economically sustainable for Beta, which is now aware that completing the activity with such a limited resource availability will take years.

Additionally, to further complicate the AI implementation is the process of learning that the AI technologies should accomplish when introduced in a new industrial context. This intricate process involves, for instance, acquiring a highly specific lexicon, decoding Big Data - particularly those coming from the IoT platform, and learning how to provide customers with replies that are reliable and in compliance with regulations in force for each country worldwide.

Finally, Beta is currently struggling in finding the right communication strategy toward the market. The company is aware that potential resistances from customers could emerge regarding the introduction of an AI-based touchpoint such as the chatbot. The new touchpoint may alter the accustomed human-centric relationship dynamic and somehow destroy value that, for some customers, was inherent in human interaction.

Some preliminary observations can be drawn from the two illustrative cases. A first, general consideration relates to how Alpha and Beta are a clear demonstration that AI entails a great potential in transforming operations management along the SC, with implications both upstream and downstream. However, the two cases also underline that achieving benefits from AI is far from easy. It requires going through a non-linear process, where the expected optimization in terms of both efficiency and efficacy could be undermined by a highly resource-consuming implementation journey. Indeed, the resources in play are many and different and, in most cases, more in quantity than initially expected.

The experience of Alpha and Beta also allows us to observe that a complex network of actors is in play when considering AI. On the one hand, inter-organizational relationships with a constellation of suppliers greatly impact the overall competence of the firm to effectively apply AI within its SCM operations. On the other hand, properly managing the relationship with customers is crucial to reduce, if not avoid, resistances to change and value destruction. Finally, and in relation to the previous point, a common mistake of companies involved in AI implementation is conceptualising such technology as an overarching tool able to solve varied problems; the cases shed light on a missing clear vision of the goals underlying AI, the actors to involve, the resources to adopt, as well as the activities to implement. A fragmented approach to AI along the SC is the most prevalent approach so far.

Research limitations. As we highlighted, this paper is exploratory in nature. The main aim in this phase is to pave the ground for future research relying on insights stemming from the two cases. Notwithstanding this approach, the study here is not without intrinsic limitations. A first limitation is related to the data collected that are quite different in terms of amount and quality in the two cases. In the case of Alpha we had the opportunity to make only a few interviews so far, and the project of AI implementation is in its initial phase. In the case of Beta the process of AI introduction is more advanced and we had the opportunity to interact with the company in a more intensive way for this study and to rely on a large amount of data that we collected in the last five years for other research purposes.

Managerial implications. We believe that this research, taking into account the bundle of resources already in play in a given industrial context, and analysing AI as a resource to be integrated in it, could provide important insight to companies involved in integrating AI in their SC.

Some possible contributions with the proceeding of this research, follow. Firstly, an accurate and preliminary mapping of the network of resources in play (both tangible and intangible) seems to be crucial in the cost-benefit evaluation, in the design of the integration process, as well as in the effective exploitation of AI potential. Resources present interfaces that are not easy to change and adapt, and a change in one interface to adapt to a new introduced resource (AI), can cause problems in other resource interfaces with additional costs for the company. Secondly, AI big players and their products currently present a standardised way in facing the market and the customers, that is not aligned with specific company's needs (this is especially true for smaller companies) that are struggling with finding more flexibility and adaptation in the use of AI solutions in their specific resource bundle in the SC. In this respect, other actors - in an inter-organizational perspective - will play a major role in these processes, i.e., Universities, IT business solution providers (see, for example Accenture), institutions, IT platforms, logistics platforms, etc. It becomes thus important for

companies to select the right partners to pursue the objective of AI integration in the SC. This also implies - in an intra-organizational perspective - a profound revision of the capabilities of people involved in the process within the firm, who have to be ready to mediate with those actors and each-other.

Finally, and linked to the previous two considerations, the initial stage of AI implementation seems to call for an incremental approach, where different suppliers and technologies are evaluated and tested, until the best solution is found. Considering that this initial step can last a consistent time, firms could exploit this time to develop a long-term vision for AI applications, in order to adapt the initial efforts to further expansion of AI along the SC. To do this, it is paramount to find the best fit between the actors involved and the resources requested to implement the AI solutions in consideration. Indeed, with the right partners and powerful AI infrastructures, it could be possible to invest on a wider project of conjunct optimization of the entire SC and its management, therefore balancing the trade-off between AI costs and benefits and truly exploring increased efficiency and efficacy.

Originality of the paper. The paper offers an original perspective on the relationship between AI and SCM in the operation management domain, in the light of its focus on resource interaction. Considering AI and AI-related solutions and tools as a resource in itself - and not “simply” a panacea - that has to be integrated with other resources, provides a different angle of analysis that could contribute with its future development to the debate around the possible future of AI contribution in the companies’ SCM projects implementation.

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Strategic Foresight and Artificial Intelligence: Evidence of a Paradoxical Relationship

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Framing of the research. *Amidst the dynamic landscape of today's business environment, where change is constant and unpredictable, the need for strategic foresight – “the application of futures and foresight practices by an organization to advance itself” (Gordon et al., 2020, p. 2) – is paramount. Companies, driven by the imperative to innovate and stay competitive, must adopt proactive approaches to anticipate future events (Bell, 1997; Iden et al., 2017; Tapinos and Pyper, 2018). Indeed, innovation is not a spontaneous process that magically happens but instead a process of evolution with design, with leaders needing to play a role in cultivating and fertilizing innovative behavior throughout organizations (Scott and Bruce, 1994; Leavitt, 1996; Yuan and Woodman, 2010). Relatedly, scholars consistently credit foresight practices, such as future thinking and scenarios (De Smedt et al., 2013; Eisenbart et al., 2022), not only expanding the range of futures under consideration but also aiding in identifying more effective innovations (Kameoka et al., 2004). As organizations grapple with the challenges of the contemporary world, the interplay between strategic foresight and innovative behavior emerges as not merely desirable but essential for sustained success (Bradfield et al., 2005; Chermack, 2005; Burt and Wright, 2006; Rhisiart et al., 2015). Prior research has delved into the contextual precursors of innovative behavior, such as organizational climate, and underlying elements, like cognitive style, openness to experience, creative personality, and self-efficacy (Vecchiato, 2017; Kwon and Kim, 2020; Cristofaro et al., 2022; Marchiori et al., 2022). While existing literature acknowledges the central role of mental models in fostering innovative responses, there are far fewer studies that explore the cognitive processes and strategies that can stimulate managers' ability to see and sense the future and, hence, their innovative behavior (Burt and Nair, 2020; Eisenbart et al., 2022).*

Purpose of the paper. *Despite foresight and innovation research underscoring the importance of anticipating the future for reaching effective innovations, significant gaps remain in identifying factors affecting the relationship between them (Gordon et al., 2020, p. 8). Only recently, some scholars theoretically advancing a positive effect of Artificial Intelligence (AI) on foresight efforts have taken steps in this direction (Schühly et al., 2020; Truong and Papagiannides, 2022; Bahoo et al., 2023; Dwivedi et al., 2023), but with only little empirical test. Thus, a gap exists in understanding how foresight can successfully leverage AI to stimulate innovative behavior (Gordon et al., 2020, p. 8).*

The literature recognizes that foresight's primary outcomes in organizations are various forms of innovation, demonstrating how scenario thinking can lead to identifying new opportunities and as a precursor to product innovation (Worthington et al., 2009; Sarpong and Maclean, 2011). Indeed, in the context of a more appropriate response to a changing environment, a relevant topic is also the relationship between foresight and company performance, which, according to a study by Rohrbeck and Kum (2018), is a positive relationship and reveals that companies prepared for the future have a higher probability of outperforming the industry.

Moreover, Yoon et al. (2020) developed a model linking foresight, organizational learning, and innovation. They found that the relationship between foresight and organizational learning is moderated by integrative capabilities, and the level of integrative capabilities conditions the indirect effect of strategic foresight on innovativeness through organizational learning. Recently, Schwarz et al. (2023) explored foresight methods among design thinking professionals, analyzing their adoption of techniques that anticipate future customer needs and emphasize emerging technologies. They found positive correlations between foresight methods and their contributions to project success. Schwarz et al. (2023) concluded that the toolbox of design thinkers should also be expanded by prevalent methods from foresight, particularly trend research or scenario planning. In these discussions, the positive benefits of foresight activities are based on the hard work and cognitive efforts of decision-makers. Therefore, our baseline hypothesis is the following:

H1: Strategic foresight positively influences innovative behavior.

Furthermore, attention to AI has grown among researchers and industry experts over the past years (e.g., Gao et al., 2021; Del Giudice et al., 2023; Haefner et al., 2021; 2023) because it allows computers to emulate human brain activities

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like reasoning, learning, and planning, thereby addressing complex challenges, formerly the domain of human experts (Lei and Wang, 2020). Specifically, AI empowers machines to learn, process, and utilize knowledge for task performance, uncovering or tapping into knowledge that can be conveyed to humans to bolster the decision-making process in an organization (Cerchione and Esposito, 2017; Camarillo et al., 2018; Grzonka et al., 2018; Vajpayee and Ramachandran, 2019; Dwivedi et al., 2023). In particular, AI bolsters companies' ability to conduct intricate quantitative and qualitative data analyses, thereby enhancing their modelling procedures (Keller and Heiko, 2014, Heiko et al., 2015). This capability facilitates the discernment of uncertainties in the current and future environment, paving the way for the systematic identification of potential opportunities and risks (Nascimento et al., 2021; Jabeur et al., 2022).

Conversely, it is worth pointing out how AI can cause information overload, namely, when a person receives too much information or, more specifically, when the input exceeds processing capacity (Ferguson et al., 2022). Some have also warned against the possible detrimental effects of AI on cognitive processes and skills: when trying to substitute deep reflection and learning with AI, the benefits of efforts that lead to critical and innovative thinking and holistic problem-solving skills are lost (Yu, 2023).

Moreover, while foresight activities due to cognitive efforts and benefits of prospective thinking can lead to more innovative behavior, substituting those cognitive efforts with technology, and AI in particular, could accelerate or negate some benefits. Accordingly, we derive the following hypotheses:

H2a: High or no use of AI during foresight will negatively influence the relationship between individual foresight and innovative behavior.

H2b: Moderate use of AI during foresight will positively influence the relationship between individual foresight and innovative behavior.

Methodology.

Research Design. In this study, an experimental design to test hypotheses has been adopted. This method is considered valid for fields of research that have largely passed the nascent stage of development (Edmondson and McManus, 2007), as is the case with future studies and innovative behavior, as established by a few literature reviews (Iden et al., 2017; Kwon and Kim, 2020). Moreover, we can draw more confident conclusions about the causal relationships via an experiment by manipulating the independent variables and observing their effects on the dependent variable – also in line with the recent call for more experimental design in strategic foresight research by Derbyshire et al. (2023) to improve the scientific basis of futures and foresight research.

We adopt a between-group design with a 2x3 factorial between-subject experimental design. In a between-group design, participants are divided into groups (conditions), and each group receives a different condition or treatment (Montgomery, 2017). In this case, we have multiple experimental and control groups representing other conditions. The 2x3 factorial between-subject experimental design indicates that we have two independent variables, each with three levels. The two independent variables in this design are 1) Foresight (Level 1, Present: participants receive the foresight prompt; Level 2, Absent: participants do not receive the foresight prompt), and 2) AI usage (Level 1: No use; Level 2: Moderate use; Level 3: High use). Combining the levels of both independent variables, we create the different experimental groups (introduced later). This factorial design allows us to examine the main effects of each independent variable and the interaction effect between them. By comparing the outcomes across the different conditions by conducting a two-way ANOVA, we examine the influence of foresight, AI use, and their combined effects on innovation outcomes.

Participants and Procedures. We recruited 252 professionals with practical experience establishing market potential for new products through convenient sampling. This was possible thanks to the Placement office of the Faculty of Economics of a leading University in Italy. These participants graduated from the same business school, completing an honors degree program in management.

Since we aim to investigate the impact of foresight prompts and different levels of AI usage on participants' generation of innovative extensions for a specific project, we formed four groups of equal numeric composition (i.e., 63 each). Three of them were prompted, before generating innovative product developments, to make strategic foresight for the company offering that innovative product. In particular, the prompt asked to envision the future landscape of the company offering the proposed innovative product over the next decade. Two prompted groups were given access to AI for their foresight, each engaging with the technology at different intensity levels – moderate and high.

We administered an online survey to participants who were asked to be assisted with AI during the experiment. In contrast, we administered a paper-based survey to participants who were asked not to use AI or any other online source. All participants were asked to envision themselves as a company manager focused on pursuing growth opportunities through fostering potential innovation related to a consumer product. They were presented with one product offered by a newly established company in Italy and subsequently required to identify further developments. It is important to note that this product was in its early stages and could be developed further. With a 90-minute time limit, all participants were asked to generate extensions for that specific product and said that the 'best extension' would be awarded. The notion of making the 'best extension' carried out a connotation of competitiveness, further fostered by the promise of a 20€ gift voucher to the top ten performing subjects.

To ensure accurate data collection, participants must enter their extensions as text before completing the survey. This process allowed for a comprehensive examination of the innovative ideas generated by the participants. In brief, the four experimental conditions were:

- *Control Group: No foresight prompt and no AI usage. Participants neither received a foresight prompt nor had access to AI during the product extension generation process.*
- *Experimental Group 1: foresight prompt and no AI usage. Participants received the foresight prompt before the product extension generation process but did not have access to AI.*
- *Experimental Group 2: Foresight prompt and moderate AI usage. Participants received the foresight prompt before the product extension generation process and had access to AI for moderate AI usage.*
- *Experimental Group 3: Foresight prompt and high AI usage. Participants received the foresight prompt before the product extension generation process and had access to AI for high AI usage.*

To ensure participants' understanding and effective AI usage, we guided accessing and being assisted by the AI language model during the task – ChatGPT in particular.

Measurements. We initially sourced a product from Kickstarter's renowned crowdfunding platform. By selecting products from such platforms, we ensured that the idea presented was in its early stages of development, requiring additional funding and refinement before it could be successfully introduced to the market. This methodology aligns with prior studies recognizing the comparable evolutionary state of ideas pitched through crowdfunding (Kornish and Ulrich, 2014). In this study, we introduced participants to a project centered around a new vacuum cleaner, the Skadu M1 (product name not provided to respondents). This vacuum cleaner was created by a start-up called Hyper Lychee, established in 2020. All participants will be provided with the anonymized product description obtained from the crowdfunding platform; this information will enable them to envision potential enhancements and developments that can be derived from the initial product.

Only participants in the experimental groups were presented with short anonymized and pertinent company information taken from Kickstarter, namely, "Company ABC is an Italian start-up set to revolutionize the way people execute daily tasks at home by building technologically and design advanced products to improve the overall quality of life." The Italian context was chosen to allow familiarity with the context. The generated product extensions were evaluated by a team of experts comprising two academic experts in business and management, focusing on new product development, and an external academician who has served as a judge in national startup competitions for the past six years.

To operationalize AI usage, we defined specific guidelines, including the time and number of interactions participants are allowed with ChatGPT. In particular, the following different levels of AI usage were defined:

- *No AI usage: Participants cannot access ChatGPT. They rely solely on their cognitive abilities, knowledge, and experience throughout their innovation-oriented process.*
- *Moderate AI usage: Participants should have at least five and 15 interactions with ChatGPT. This ensures that participants engage with the AI to a certain extent, simultaneously preventing them from excessively relying on AI usage.*
- *High AI usage: Participants should have a minimum of 16 interactions with ChatGPT, with no maximum limits imposed. This ensures a meaningful engagement with AI.*

Group Parity Verification. We verified the comparability of all groups via a) random assignment, b) verification of participants' mental capabilities to conceive futures and understand cause-effect relationships, and c) AI literacy. Regarding the first, participants were randomly allocated to the different experimental conditions. This approach ensured that each participant had an equal chance of being assigned to any of the conditions, minimizing the potential influence of confounding variables. Using random assignment, the study aims to enhance internal validity and establish more robust causal relationships between the independent variables (foresight and AI) and the dependent variable (generation of innovative extensions). Regarding the second, any differences in the groups' ability to apply foresight could potentially bias the results (Silvia, 2008). Therefore, we analyzed the future extensions generated by the subjects. Finally, we adopted the 12-item scale on AI literacy developed by Wang et al. (2022), utilizing a 7-point Likert scale (Cronbach's alpha 0.83). This allowed us to assess the internal consistency and reliability of the scale in measuring participants' AI literacy in our experiment. On average, participants scored 5.2 on this test ($SD = 1.76$), thus demonstrating good AI literacy.

Data Analysis. The transcripts of all extensions were read independently by two researchers, unaware of the groups they originated from. They then individually coded the extensions using an inductive approach. The codes and criteria were exchanged to ensure clarity in the coding scheme. A final set of criteria was established for coding the extensions. Any discrepancies in the coding results between the researchers were discussed until only a few instances of misalignment remained. Subsequently, a third researcher verified the consistency of each code with the defined criteria. Complete alignment was achieved through a final round of discussion among all coders.

Results. *To test the proposed hypotheses, a two-way ANOVA was conducted with foresight (present vs. absent), AI usage (no AI use, moderate AI use, high AI use) as the independent variables, and innovative behavior as the dependent variable. According to descriptive statistics shown in Table 1, participants exposed to foresight prompts exhibited elevated innovative behavior ($M = 6.25$, $SD = 1.20$) compared to their counterparts without these prompts ($M = 5.10$, $SD = 1.35$) – in line with Hypothesis H1. Concerning the role of AI, the data revealed that participants who moderately used AI not only had enhanced innovative behavior ($M = 7.20$, $SD = 1.25$) but also outperformed the no AI use ($M = 5.10$, $SD = 1.40$) and high AI use groups ($M = 5.35$, $SD = 1.32$). These observations bolster Hypothesis H2a, where excessive or no AI diminishes the synergy between foresight and innovation. Conversely, Hypothesis H2b is also initially*

supported, highlighting the sweet spot of moderate AI use in accentuating the positive influence of foresight on innovative behavior.

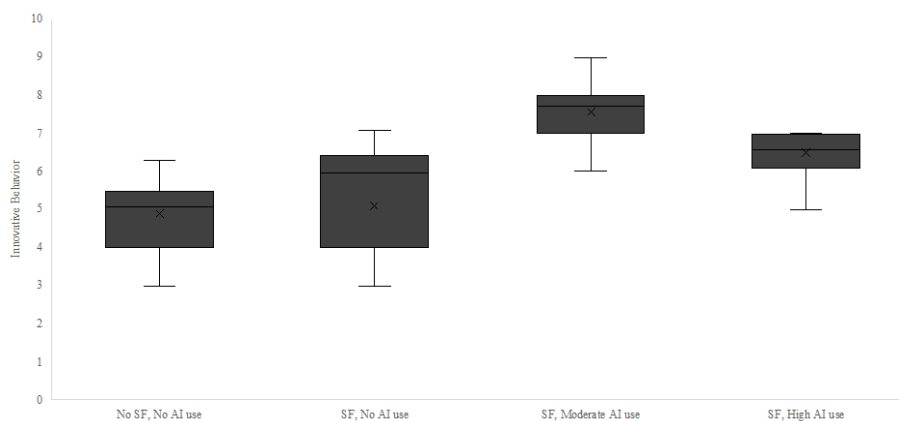
Table 1: Effects of Strategic Foresight and AI on Innovative Behavior

Group	Mean (SD)	F-value	p-value	Effect Size (η^2)
No SF (control)	5.10 (1.35)	8.22	0.451	0.03
SF and no AI use (1)	6.25 (1.20)	14.67	0.001*	0.09
SF and moderate AI use (2)	7.20 (1.25)	9.64	0.002**	0.04
SF and high AI use (3)	5.35 (1.32)	6.31	0.012*	0.03

Notes: Strategic Foresight. Values within the parentheses represent standard deviations. Correlation significance levels: * $p < .05$, ** $p < .01$, *** $p < .001$.

Further analysis strengthens the above observations. As shown in Table 1, post-hoc comparisons revealed that participants with moderate AI usage [$F(1, 246) = 9.64, p = 0.002, \eta^2 = 0.04$] showed a higher level of innovative behavior compared to those promoted with SF and no AI usage [$F(1, 246) = 14.64, p = 0.002, \eta^2 = 0.04$] and promoted with SF and high AI usage [$F(1, 246) = 6.31, p = 0.012, \eta^2 = 0.03$]. Thus, a significant interaction effect was found between foresight and AI usage, confirming Hypothesis 1.

Figure 1: Innovative Behavior Scores Across Experimental Conditions



Notes: SF = Strategic Foresight.

The box plot (Fig. 1) visually encapsulates the interplay between foresight (SF) and Artificial Intelligence (AI) usage on innovative behavior scores. Each box represents innovative behavior scores' interquartile range (IQR) for distinct experimental conditions. Notably, participants exposed to foresight prompts (SF present) exhibit a visibly higher median innovative behavior score compared to those without foresight prompts (SF absent), i.e., ($M = 6.56$ vs. $M = 5.07$), corroborating the earlier descriptive statistics. Furthermore, the impact of AI usage becomes evident as the box plot illustrates a nuanced relationship. Participants with moderate AI use showcase an elevated median ($M = 7.70$). This aligns with the findings that moderate AI use outperforms both no AI use and high AI use groups, supporting Hypothesis H2b. Conversely, high AI use and no AI use (in the presence of a foresight prompt) constrain innovative behavior, evidenced by a comparatively lower median than the one in the moderate AI-use condition (in the presence of a foresight prompt). This nuanced depiction supports Hypothesis H2b.

Research limitations. There are also limitations of the study. The sample size, consisting of participants with similar backgrounds, might not represent the broader organizational population, restricting the generalizability of the findings. Similarly, the controlled laboratory setting, though providing standardized conditions, may reflect something other than real-world organizational intricacies. However, despite some scholars' skepticism toward the realism of experiments, they are strongly "useful for zooming in on one particular part of a process and studying how it works" (Derbyshire et al., 2023, p. 9). This is what we aimed for and did via the investigation of the use of AI during strategic foresight toward innovative behavior. An experiment conducted on participants in a real company undertaking that strategic foresight exercise, then conceptually replicated across several other companies, adds solidity to the unveiled results.

Additionally, using ChatGPT introduces its own set of constraints. Despite its vast capabilities, its performance can be contingent on the nature of the task, or any potential biases present in the training data. Viewing our results in the context of this specific AI tool becomes essential. The evaluation criteria, which depended on expert evaluations for

innovative behavior, might miss the broader spectrum of behaviors or their actual impact on market success. The study's emphasis on a specific consumer product from a crowdfunding platform also narrows its applicability to other industries. Incentive structures, such as gift vouchers and competitive elements, might influence participant responses and behaviors, possibly altering the results. Such demand characteristics need due consideration when interpreting the findings.

Managerial implications. The findings of this study have implications for both managerial practice and organizational strategies aimed at fostering strategic foresight and innovative behavior. In this vein, managers play a pivotal role: embracing strategic foresight as a strategic compass enables them to envision the future landscape of their organizations.

Therefore, to foster strategic foresight, managers and organizations must establish conditions for two key aspects: 1) enabling managers to engage in multi-level thinking in foresight, and 2) effectively managing AI assistance in foresight. In addressing the first aspect, actionable implications for practice emerge. A primary focus should be on training managers to comprehensively evaluate the company and its future development factors, urging them to embrace multi-level thinking in foresight. This involves expanding their perspective on product innovation to encompass organizational, strategic, and operational processes and internal and external environmental considerations.

To achieve a balanced and effective integration of AI in strategic foresight, organizations should establish a comprehensive framework that outlines the strategic deployment of AI alongside human intelligence. Clear guidelines and policies for moderate AI use must be developed, defining thresholds and scenarios where AI can enhance decision-making without leading to information overload or over-reliance. Cross-disciplinary collaboration is crucial, encouraging communication and decision-making among interdisciplinary teams comprising data scientists, AI specialists, as well as people who understand how individual and organizational behavior works. Continuous monitoring and evaluation mechanisms should be implemented to assess the impact of AI applications in foresight, enabling organizations to adjust usage based on performance and feedback (Keding and Meissner, 2021). Training programs for AI literacy are essential, ensuring that decision-makers and foresight practitioners understand the capabilities and limitations of AI for informed and responsible usage. Finally, involving key stakeholders in the decision-making process regarding AI use fosters a comprehensive and inclusive approach.

Originality of the paper. We examined links between foresight and innovative behavior and the impact of AI usage on it. The findings of the 2x3 factorial design confirmed the formulated hypotheses. First, strategic foresight positively affects innovative behavior. Second, while too much or too little AI use can negatively influence this relationship, a moderate amount appears to be just right, acting positively.

Keywords: Strategic foresight; Artificial Intelligence; Innovation; Innovative behavior; ChatGPT

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A Systematic Literature Review on AI-empowered Strategic Decision-Making process

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Abstract

The purpose of this paper is to create a more comprehensive understanding of how artificial intelligence is revolutionising the way strategic decisions are made. Indeed, despite the massive use of AI in business contexts, especially to perform operational and tactical tasks, its potential at a more strategic level still requires further investigation. Using a systematic literature review based on 42 papers drawn from Web of Science and Scopus, we identify 3 macro-thematic areas - (1) antecedents and Risks of AI Use in strategic decision-making, (2) outcome orientation, (3) process orientation - as well as some sub-themes in the second and third categories. We conclude by providing some insights on future avenues of research.

Keywords: *strategic decision making, artificial intelligence, decision; outcomes, process*

Framing of the research. *Effective decision-making is a crucial factor contributing to organizational success (Blenko et al., 2010). Several literature reviews have been conducted to investigate AI/human collaboration to perform some operational and repetitive tasks such as human resource training, recruitment and performance evaluation (Qamar et al., 2021; Votto et al., 2021; Vrontis et al., 2022) as well as advertising, promotion and pricing activities (Verma et al., 2021; Vlačić et al., 2021), smart manufacturing activities (Cioffi et al., 2020; Wang et al., 2021). These are indeed some of the areas in which AI has spread at an incredible pace in the last decades. However, a big challenge to be explored is whether and how AI can provide significant support to human decision-makers for more complex and impactful strategic decisions.*

Purpose of the paper. *Despite the growing popularity of AI as a topic at the intersection of different research fields - information science, computer science, and management - its implications for management research in decision-making have been predominantly studied by exploring its use at an operational and tactical level (Niu et al., 2021; Rana et al., 2022). The purpose of our paper using a systematic literature review is to examine the adoption of the disruptive technology of Artificial Intelligence (AI) in strategic decision-making.*

Methodology. *Systematic literature reviews provide a rigorous scheme of the activities performed by scholars while conducting a literature review: “assembling, arranging, and assessing existing literature in a review domain (i.e., the 3 As)” producing as an outcome a “state-of-the-art understanding of existing literature and a stimulating agenda to advance understanding through new literature in the review domain (i.e., the 2 Ss)” (Paul et al., 2021, p. 2). A systematic review aims to select and map findings of research papers that meet specific inclusion criteria, consistently with previously defined research questions, applying a replicable and transparent protocol. The adoption of such a scientific method distinguishes systematic reviews from traditional narrative reviews and allows for the reduction of bias during the review process, thus providing robustness to the findings and conclusions drawn by researchers (Snyder, 2019; Tranfield et al., 2003). The output generated is a robust overview of evidence in the research domain of interest (Petticrew & Roberts, 2008). The review has been conducted through the steps detailed in Figure 1 below.*

Findings. *Based on our analysis we grouped our themes into outcome-based, process-based and antecedents-based, evidencing how the literature until now has tried to shed light on the possible positive or negative antecedents of the adoption of AI in strategic decision-making the outcomes resulting from it and some aspects characterising the process itself. In considering each theme also identified the methodologies adopted.*

Antecedents and Risks of AI Usage

Some scholars have investigated drivers and barriers to AI adoption in strategic contexts (Kar et al., 2021). However, the majority of the studies dealing with this topic in our sample do not explicitly refer to strategic-level decisions, but adopt a general perspective on decision-making.

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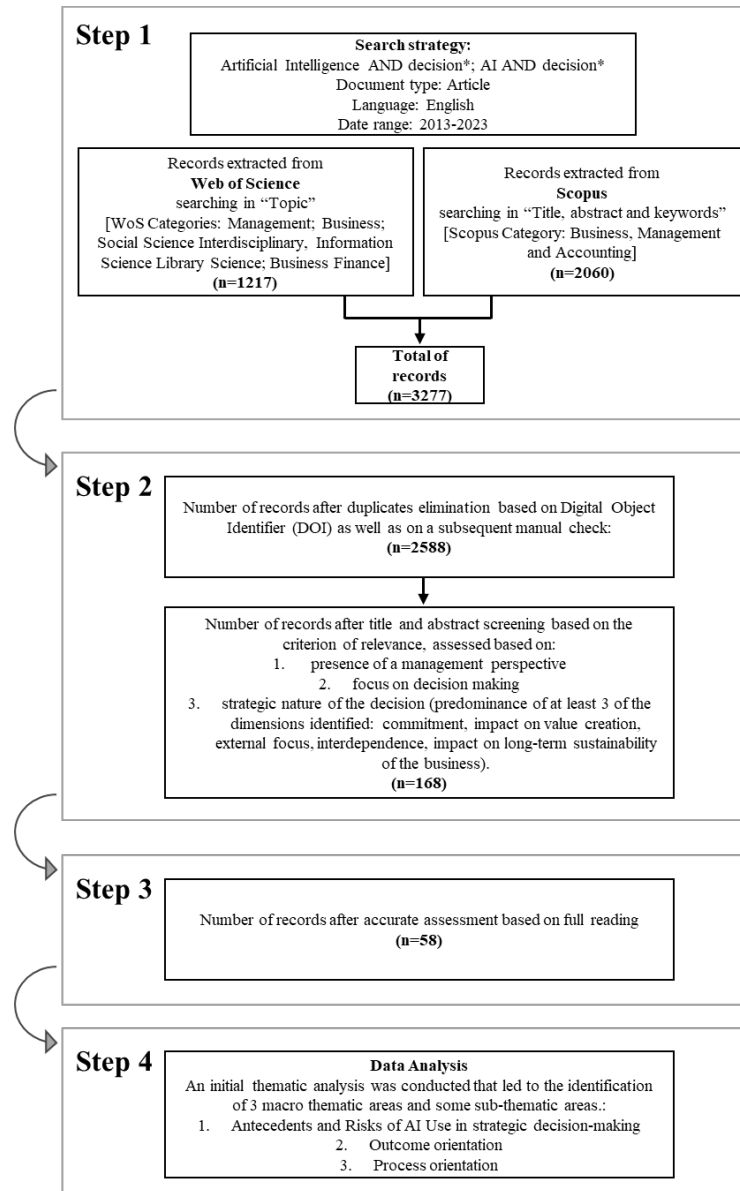
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Additionally, some of the studies that mainly deal with outcome and process oriented factors, provide some useful insights on antecedents that have enriched the general understanding of this aspect of the topic.

Some antecedents are linked to human-AI interactions for the integration of AI in organisations (Fares et al., 2022). First of all, what can significantly hinder AI adoption even in strategic contexts is the lack of awareness of the need of AI by decision makers (Chen et al., 2021).

Fig. 1: SLR process



If this barrier does not hold, then the others can be taken into account. The behavioural anomaly of algorithmic aversion as the reluctance of managers to rely on algorithms for their decisions (Mahmud et al., 2023) is undoubtedly a great barrier to AI adoption, especially in strategic contexts (Brink et al., 2023). It can be influenced by what is referred to as the degree of digital/technological readiness (Eriksson et al., 2020; Kondapaka et al., 2023). Other barriers that occur at an individual level are threat to job security (Chen et al., 2021; Kar et al., 2021), perceived risk and reliance on AI, as well as perceived control over AI (Solberg et al., 2022). Ethical concerns on the lack of moral responsibility of AI algorithms for their decisions are also relevant in shaping human attitude (Trunk et al., 2020).

Some however arise at a higher organisational level. Examples are lack of AI talent, lack of AI strategy, lack of infrastructure, challenge in problem selection and lack of leadership commitment (Kar et al., 2021). At an aggregate level, an overarching organisational culture is also considered a relevant factor in influencing the propensity toward AI adoption (Eriksson et al., 2020; Fares et al., 2022). However, even organisational structure and the allocation of resources as well as the overall organisational strategy play a key role in the choice of AI applications for strategic decision-making (Trunk et al., 2020).

There are then some antecedents which have their roots in AI characteristics and functioning as well as in the input data of AI algorithms. Some examples are: state of AI (it may be too narrow-focused and not suitable to the type of

company and its level of maturity); reliability of AI (error tolerance, biases and accuracy); data and privacy concerns (Chen et al., 2021; Jiang et al., 2023; Kondapaka et al., 2023), data leakage, and unpredictable AI behaviours (Jiang et al., 2023), lack of reusable algorithms, lack of usable data (Kar et al., 2021). Data transparency is instead a driver of AI adoption (Trunk et al., 2020).

Serious risks are represented by over-reliance on intelligence decision-making, and unpredictable AI behaviours (Jiang et al., 2023), risk of inaccuracy due to the training of AI on different datasets, lack of transparency and exposure to hackers' attacks (Pietronudo et al., 2022).

Outcome-orientation

A large body of literature explores the outcomes generated by the implementation of AI to make strategic decisions in different contexts (Anderson, 2019; Kinkel et al., 2023). We identified 4 main subcategories: impact of AI on performance measures and competitive advantage, impact of AI on specific decisions, impact of AI on capabilities and outcome measures, impact of AI on capabilities and/or decision-related constructs.

Impact of AI on performance measures and competitive advantage

This subgroup includes the investigated impacts of AI on outcome variables linked to firm performance or competitive advantage. For example Behera et al. (2023) investigate how the implementation of Explainable Artificial Intelligence (XAI) solutions by a consumer packaged goods retailer can drive sustainable growth. Abrokwah-Larbi and Awuku-Larbi (2023) use the construct "Artificial Intelligence in marketing" (AIM) - composed of the Internet of Things, Collaborative decision-making systems, virtual and augmented reality and personalisation - and evaluate its impact on small and medium-sized enterprises performance, driven by the ability of AI to process information and eventually generate previously unidentified insights. These insights provide SMEs with superior knowledge, thus guiding and enhancing the quality of their decisions.. Focusing on a B2B context, where customer relationship management (CRM) is considered a strategic activity, Chatterjee et al. (2021) show how the shift from legacy to AI-CRM eventually leads to organisational performance and competitive advantage improvements, because it influences B2B engagements, employee experience and information processing.

The impact on performance can also be considered in a broader sense, investigating the overall increase in the performance of an organisational function (i.e. increase in the performance of the purchasing function (Allal-Chérif et al., 2021)).

Impact of AI on specific decisions

The most common fields of study in this group are marketing and investment decisions. We found that some studies explore the role played by AI in the process that leads to location decisions, concerning both production processes and headquarters. Kinkel et al. (2023) in a cross-country research in the manufacturing industry found that AI use - operationalised with an AI use index measured in terms of big data analysis, business processes planning and optimisation, and autonomous decision-making processes - is a determinant for relocation decisions of production activities (offshoring or backshoring strategies). Additionally, they document a significant positive moderating effect of digital competencies and a negative moderating effect of international ambidexterity only in the relationship between AI use and backshoring decisions. The results are explained by the fact that exploiting data and automating some decisions can enable firms to enhance control over global network activities, thus facilitating and encouraging offshoring as a suitable production location strategy. An experimental design is instead adopted by Anderson (2019) to compare the predictive power of different decision models, one of which - the modern approach - entails the use of artificial intelligence. The decision outcomes in this context concern the selection of cities for Amazon Inc. to locate its headquarters 2.

Other studies were conducted by applying and testing artificial intelligence algorithms to assess their performance in making specific decisions. For example, Khosrowabadi et al. (2022) conducted a study in the field of judgemental forecasting by applying a random forest machine learning algorithm. Blohm et al. (2022) investigate the support provided by machine learning algorithms in early-stage investment decisions made by business angels, by applying a gradient-boosted decision trees algorithm and providing evidence that the hypothetical performance of the algorithms is higher than the performance of business angels' decisions in terms of returns. Eventually, as evidenced by Keding and Meissner (2021), the integration of AI systems strongly influences R&D decisions, and the decision-maker perceives that it increases the quality of the decision itself.

Impact of AI on capabilities and outcome measures

Some studies in this stream leverage the idea that AI can contribute to the creation or strengthening of specific capabilities. In a large portion of studies, the capabilities analysed are some of those which in turn drive performance improvements and competitive advantage or influence a specific decision. Mikalef et al. (2023) explore the mechanism through which AI competencies influence B2B marketing capabilities (Information Management, Planning and Implementation), and in turn firm performance. In the same vein, Chen and Lin (2021) conceptualise and test a model to show how the three capabilities that compose Business Intelligence - namely sensing, transforming and driving capability (all empowered by AI solutions) - in addition to exerting an influence among each other, eventually affect firm performance. Consistently, drawing on Knowledge Management Theory, Bag et al. (2021), incorporate in their model three variables that operationalise the capability to create knowledge on the customer, user and external market, and a

decision-related variable (marketing rational decision-making). Their results confirm that knowledge creation is enhanced by Big Data powered Artificial Intelligence and positively affects decision-making, which eventually impacts performance.

The integration of AI in the business intelligence infrastructure also leads to improved performance appraisal capabilities, which affects competitive advantage (Wang et al., 2022). Polas and Raju (2021) account for the contribution of AI in enhancing the entrepreneurial capabilities of a firm concerning opportunity recognition, development and exploitation, thus indirectly influencing its entrepreneurial marketing decisions. Under a similar perspective, Kumar et al. (2023) investigate the effect of AI-enabled CRM capability on innovative performance measured in terms of service innovation. In all these studies, AI plays a crucial role in transforming information into usable knowledge to inform marketing decisions at all levels, including strategic ones such as product or process innovation. In the innovation field, the role played in reaching a final innovation decision also takes into account its contribution to some intermediate outcomes in terms of innovation capabilities (Recker et al., 2023).

In their conceptual framework, Chen et al. (2021) highlight the support provided by AI adoption to learning capabilities and then to some measures of financial, relational (in the B2B marketing context) and innovation outcomes.

Other decision-related capabilities that can be reinforced by AI are rationality, creativity, knowledge creation capability and absorptive capacity, as well as collective intelligence, but also the capability to innovate the decision-making process itself (Pietronudo et al., 2022).

Impact of AI on capabilities and/or decision-related constructs

Some contributions explicitly account for the role of a decision-related variable (alone or in addition to a capability-related variable) in influencing performance. These constructs generally express a measure of decision-making performance in terms of accuracy, precision, reliability, time and effort (Speier et al., 2003). Rahman et al. (2022) test and confirm the hypothesis that marketing analytics capability - the ability to gather, organise, and examine data to obtain valuable insights for marketing decisions - is positively related to competitive marketing performance. This relationship is mediated through holistic marketing decision-making and strengthened by the adoption of AI, which also positively moderates the connection between marketing analytics capability and holistic marketing decision-making. In this stream, Krakowski et al. (2023) find that the substitution of human cognitive capabilities, which are considered strategic to gain competitive advantage, with a widely accessible resource such as AI, would eventually erode competitive advantage, and this is consistent with the RBV theoretical framework. However, the combination of human cognitive capabilities referred to previously unrelated domains and machine computational capabilities generates new and enduring advantages. Therefore, according to these findings, the evaluation of the role of AI in enhancing competitive performance should take into account the degree of support provided to human decision-makers. AI is considered to generate a general improvement in decision making efficiency and accuracy while also reducing risk and costs of incorrect decisions (Chen et al., 2021).

However, not only does AI boost human decision makers' analytical capabilities, but it also supports their creativity and is becoming increasingly good at performing tasks that require tacit judgment or emotions sensing (Duan et al., 2019).

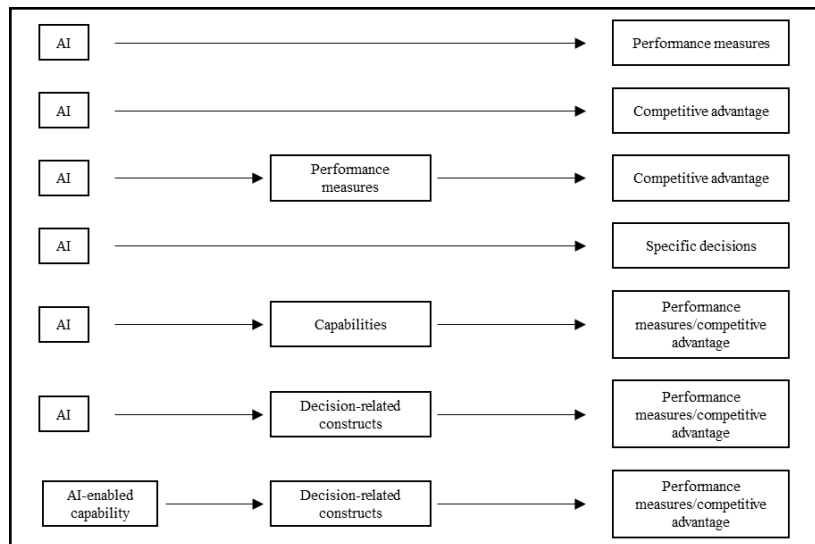
Process Orientation

Based on our analysis we identified a theme that focused on the decision-making process rather than its outcome. The

Delegation

A large and varied body of literature explores the facets of human-machine collaboration within the decision-making process. The first aspect to be highlighted in this field is delegation, the mechanisms through which the collaboration itself can take place. Schneider and Leyer (2019) investigate the willingness of managers to delegate strategic decisions to algorithms depending on the decision complexity and situational awareness of the decision-maker. They find that the degree of complexity does not actually influence the likelihood of delegating, while low levels of situational awareness significantly lead to a higher likelihood of delegating the decision to an algorithm. According to Fügener et al. (2022), delegation may occur in both directions: humans to algorithms and vice versa. Indeed, humans are endowed with hidden knowledge that does not fully manifest itself in human behaviour and, therefore, cannot be "taught" to machines but, conversely, machines have a great potential in discovering solutions that go beyond human processing capacity. The combined performance resulting from the collaboration between the two actors should be higher than the performance of the best-performing actor, but it depends on the ability to properly exploit the delegation mechanism: humans are less likely to delegate effectively due to the lack of sufficient metaknowledge; on the contrary, AI is effective in delegating to humans. The collaboration based on delegation may take different forms: hybrid (human-to-AI and AI-to-human) sequential decision-making and aggregated human-AI decision-making (Shrestha et al., 2019).

Fig. 2: Overview of outcome-based findings



The delegation issue may become even more complicated in big corporations endowed with analytics centres of specialised data scientists. In such contexts characterised by information asymmetry between the data scientist and senior managers responsible for making the decisions based on analytical results, a principal-agent problem arise, which can be mitigated by setting clear shared objectives (Willigers, 2020).

subcategories in this theme are: delegation, Complementarity of knowledge and skills, intuition and bias.

Complementarity of knowledge and skills

Other studies instead aimed at unveiling how human-machine collaboration occurs in terms of skills and cognitive abilities complementarity.

Although Arnott et al. (2017) claim that there is limited room for a strong interaction between human cognitive abilities and the set of rules and algorithms that can inform decisions in the field of strategic planning, other scholars have attempted to shed light on the relationship between the two actors in a strategic decision-making context. In this stream of literature, a fundamental aspect brought up to the discussion is the different knowledge they can exploit. Explicit knowledge, codified and stored, is the easiest to be transferred to and processed by AI systems. Tacit knowledge is instead rooted in experience and this characteristic prevents the possibility to train AI algorithms with it (Kondapaka et al., 2023). However, the tacit knowledge possessed by individuals is thought to make the difference when it comes to strategic decisions, which Metcalf et al. (2019) refer to as known unknown. As emerges from the study by Kondapaka et al. (2023), along with tacit knowledge, in a strategic context there are some human characteristics that are hard to imitate by AI and therefore define the role of the human decision-maker: experience, creativity, judgment, wisdom. On the other hand, the role played by AI is justified by its ability to extract patterns from data and may consist of supporting, assisting, reviewing, consulting, inspiring or helping. According to their findings, the harmonisation of the two roles can be reached by connecting the two actors effectively and by reaching the right balance between explicit and tacit knowledge. Therefore, as pointed out by Eriksson et al. (2020), the role played by AI in strategic decision is mainly linked to its rational abilities: it identifies, processes and reviews relevant information that will eventually influence the decision. However, they also argue that AI can make the decision, with the manager acting as a supervisor.

In line with the idea of reaching a harmonious level of collaboration between the two actors, the achievement of a higher-level intelligence can also occur thanks to the implementation of a particular type of AI solution, the so-called artificial swarm intelligence (ASI). This is relevant when dealing with known unknown strategic decisions since it allows groups of highly competent individuals to work and collaborate as a unique “supermind” (Metcalf et al., 2019). The computational power of AI in such applications is exploited not just to extract insights from data (e.g. machine learning algorithms), but to realise a powerful collaboration between individuals that can provide a valuable contribution to the decision, thus leveraging both explicit and tacit knowledge.

A different perspective on knowledge and skills interaction is offered by the idea that AI augments human tacit knowledge by supporting humans’ learning processes. This has been tested by Gaessler and Piezunka (2023) in a difference-in-difference framework based on two computer chess natural experiments. The interactions occurring in such an experiential learning context, despite being far from real-life strategic situations, are thought to be useful examples of complex strategic interactions where the potential of AI in supporting human learning can be tested. The results of these AI-backed computer simulations show that players who trained with AI are more likely to win. According to Trunk et al. (2020), there is a clear division of tasks between humans and AI such that the definition of goals can only be performed by humans, AI can outperform humans in collecting information, but the role of humans remain crucial in identifying the relevant sources and in contributing with the non-codified knowledge they own. Then human may equal or outperform AI in interpretation tasks. In the definition of alternatives, assignment of utilities and probabilities and weighting and

decision tasks, AI support turns out to be precious in performing the mathematical calculations, which are, however, based on rules predefined by humans and will always have to be evaluated by humans.

Intuition

In analysing the human-machine interplay, a key aspect pointed out by various scholars, especially in conceptual papers, is intuition, to which humans generally resort for complex decisions (Simon, 1957). Indeed, AI can contribute to both rational and intuitive decision-making, which characterises many strategic contexts. The support provided to the former is due to its computational power that allows it to analyse historical data as well as identify and compare different courses of action. However, surprisingly, it can also support the latter. It is undeniable that the reliance on intuitive decision-making on past experiences and feelings that cannot be taught to AI as well as the lack of data on similar situations that occurred in the past, both prevent AI from providing useful guidelines to make intuitive decisions. However, it is anyway thought that AI indirectly contributes to the creation of tacit knowledge that feeds the cognitive structures of managers by means of the insights provided in those situations where historical data are available and that eventually feed managers' intuition (Tabesh, 2022). Human-machine collaboration in decision-making can be seen as a partnership built on a strict division of work, based on the advantages of each of the two partners. In decision-making situations characterised by uncertainty, complexity, and equivocality, none of the two actors would be sufficient alone. In facing uncertainty, humans contribute by means of their intuition to face the unknown and AI provides access to useful real-time information. Confronting complexity, humans identify the necessary data and the sources, AI is responsible for collecting and processing it and humans, again, will be able to select the best course of action among alternatives equally supported by data. Eventually, in dealing with equivocality, AI contribution consists of analysing sentiments and providing possible interpretations while the human role mainly implies negotiation and the tentative to build consensus. However, humans are considered to have a superior performance in such situations due to their ability to consider the big picture and evaluate some qualitative contextual aspects such as political and social situations (Jarrahi, 2018). According to Vincent (2021), the key to an effective collaboration between human intuition and AI lies in two factors: a high level of expertise of the decision maker and the ill-structured nature of the decision.

Bias

Another aspect that influences human-machine performance and their interplay in the decision-making process and that deserves even more attention at a strategic level is represented by bias. Not only humans but also machines are affected by biases in their predictions and decisions. Edwards and Rodriguez (2019) clarify how six relevant types of bias typically associated with humans can indeed affect both machines that perform analytics and humans in relating to it at the different stages of the analytics process (acquisition, information extraction, data integration, analytics and interpretation). They are referred to as bias towards the first information received, keeping the status quo, justifying past choices, supporting instinct, problem-solving methods affecting decisions, and lacking forecast feedback. The authors also propose some strategies to overcome them. Similarly, Van Giffen et al. (2022) highlight some biases affecting machines in the different data mining phases and suggest mitigation strategies: social bias, measurement bias, representation bias, label bias, algorithmic bias, evaluation bias, deployment bias, and feedback bias. Their resolution always requires human intervention. Conversely, some behavioural biases affecting human decision-makers can be circumvented by means of algorithms (Hasan et al., 2022). These biases may lead to suboptimal decisions (Brintrup et al., 2023).

Research limitations. *The study has some limitations. Findings are limited to the databases of WoS and Scopus and are affected by our choice of keywords as well as by the manual selection of the final sample of contributions. Second, other AI-related terms may be considered for future developments. Eventually, no primary data was used to support our research agenda. Furthermore, since the focus of the study is represented by strategic decisions, which may concern several different topics and entail the involvement of various organisational functions, our findings rely to some extent on context-specific information, whose generalisability needs to be further tested in future research. However, this was a necessary compromise, in the attempt to create a high-level overarching understanding of AI in strategic decision making.*

Managerial implications. *The work has significant managerial implications. It provides insights for a deeper understanding of the AI-empowerment of strategic decision making, which is a crucial process for firms' success and growth. In particular, it can contribute to enhance manager's awareness on the possible short and long term effects of integrating AI in this process as well as on the way it can be exploited to create real synergies. AI can indeed enable to fully take advantage of the data available for the creation of both explicit and tacit knowledge, for strategic scenarios' creation and enhanced predictions.*

Originality of the paper. *Despite the rapid growth in AI research, literature on AI with a focus on strategic decision making is still fragmented. Our study aims to fill this gap, contributing to extant literature on strategic decision making by providing an overview of the changes in the field resulting from the adoption of a AI solutions.*

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Gen-AI nel settore agri-food: determinanti d'adozione ed impatto organizzativo

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Abstract

Lo sviluppo della Gen-AI sta progressivamente trasformando le modalità di produzione e distribuzione dei prodotti agroalimentari, consentendo agli operatori del settore di definire strategie più mirate, ottimizzare i processi e migliorare la produttività. Ciò in quanto, gli algoritmi di intelligenza artificiale generativa possono identificare modelli e tendenze che consentono agli agricoltori di prendere decisioni più strategiche e tempestive per massimizzare i rendimenti delle colture e minimizzare gli sprechi, nonché agli operatori logistici di migliorare l'efficienza della catena di approvvigionamento ottimizzando i processi, la gestione degli stock e la distribuzione. Sebbene ormai diverse sono le applicazioni Gen-AI nel settore agri-food, ancora limitati sono i contributi in letteratura che indagano gli effetti della Gen-AI in questo ambito. Ciò evidenzia la necessità di sviluppare ulteriori studi al fine di analizzare il potenziale trasformativo e le sottili ramificazioni dell'integrazione della Gen-AI all'interno dei paradigmi produttivi del settore agrifood. In questo contesto, la presente ricerca si propone di discernere le molteplici determinanti che impattano l'adozione della tecnologia Gen-AI nei contesti agroalimentari, le quali includono dimensioni tecnologiche, ambientali e organizzative. Lo studio, invero, si propone di analizzare i fattori che influenzano l'intenzione di adozione della Gen-AI tra gli operatori del settore agri-food e, al contempo, l'impatto della struttura organizzativa e del top management sugli stessi. La ricerca, oltre ad implementare la letteratura sulla tecnologia Gen-AI, fornisce evidenze empiriche che illuminano aspetti poco noti dell'intersezione tra Gen-AI e agri-food, presentando implicazioni teoriche e manageriali significative.

Key words: Gen-AI, agri-food, technologies, IA, digital transformation

Inquadramento della ricerca. *L'adozione delle tecnologie nel settore agroalimentare rappresenta una rivoluzione che sta modificando in modo significativo l'agricoltura, dalla produzione alla distribuzione, in risposta alle sfide globali quali la crescita demografica, il cambiamento climatico e la scarsità di risorse naturali, con l'obiettivo di garantire la sicurezza alimentare (Guerrero et al., 2023). L'integrazione delle tecnologie nel settore agroalimentare è fondamentale per affrontare le sfide contemporanee, migliorando la produttività e la sostenibilità dell'agricoltura (Gebresenbet et al, 2023). Questi avanzamenti tecnologici richiedono un approccio olistico che consideri aspetti economici, sociali ed etici per garantire un impatto positivo a lungo termine sul settore e sulla società nel suo insieme (Quattrococchi et al, 2022). L'agricoltura di precisione, in particolare, sfrutta dati e tecnologie avanzate come GPS, droni (Quattrococchi et al. 2022), sensori in campo (Saha et al., 2023) e sistemi di irrigazione intelligenti per ottimizzare l'utilizzo delle risorse e massimizzare i rendimenti delle colture (Pansoy, et al., 2024). Questi strumenti permettono una gestione agricola mirata, con un minor impiego di acqua, fertilizzanti e pesticidi, contribuendo a ridurre l'impatto ambientale dell'agricoltura (Schrijver et al. 2016).*

In tale contesto la digitalizzazione e l'integrazione dei dati ricoprono viepiù un ruolo rilevante per il progresso nel settore, con piattaforme di gestione agricola basate su cloud e intelligenza artificiale (IA) che migliorano la capacità decisionale degli agricoltori attraverso l'analisi di grandi volumi di dati in tempo reale. L'IA, in particolare, emerge come strumento essenziale per prevedere le tendenze di mercato, ottimizzare le catene di approvvigionamento e rafforzare le strategie di marketing (Liakos et al., 2018; Kamilaris et al., 2019).

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L'IA, infatti, trova applicazioni sempre più estese in agricoltura, promuovendo l'efficienza operativa e riducendo la necessità di manodopera (Huang et al., 2018). Tuttavia, l'adozione di tecnologie avanzate pone sfide, come l'alto costo e l'accessibilità per i piccoli produttori, la necessità di competenze tecniche e preoccupazioni legate alla sicurezza dei dati (OECD, 2019). L'IA facilita decisioni più consapevoli e una gestione efficiente nella produzione e distribuzione alimentare, promuovendo la sostenibilità e la sicurezza alimentare (Ravikumar, A., 2022). Tra le diverse tipologie di IA si distingue la Generative Artificial Intelligence (Gen-AI). La Gen-AI si riferisce a quelle tecnologie IA che possono generare nuovi contenuti, dati o simulazioni che non esistevano prima, apprendendo da vasti dataset esistenti (Nasirahmadi & Hensel 2022). Nel settore agri-food, ciò può tradursi in una serie di applicazioni, dalla progettazione di colture geneticamente modificate per resistere a condizioni climatiche avverse, alla creazione di diete personalizzate per il bestiame che ottimizzano la loro crescita e benessere (Garcia 2023).

La Gen-AI può essere utilizzata in vari ambiti del settore agrifood; a titolo esemplificativo, questa consente l'uso di modelli predittivi per ottimizzare i rendimenti delle colture. Attraverso l'analisi di dati raccolti da sensori in campo, immagini satellitari e modelli climatici, gli algoritmi di AI possono prevedere con precisione i risultati delle colture, consentendo agli agricoltori di prendere decisioni informate su quando piantare, irrigare e raccogliere. In tal senso Liakos et al. (2018) hanno esplorato l'uso di tecniche di machine learning per prevedere i rendimenti delle colture, dimostrando l'efficacia di questi strumenti nel migliorare la produttività agricola.

Un altro ambito di applicazione della Gen-AI è nella genetica delle colture e nell'ingegneria genetica, dove può accelerare la creazione di varietà di piante in grado di resistere a parassiti, malattie e stress ambientali. La ricerca in questo settore sta esplorando come gli algoritmi di AI possono analizzare sequenze genetiche per prevedere quali modifiche porteranno ai tratti desiderati, riducendo significativamente il tempo e i costi associati allo sviluppo di nuove varietà. Hickey et al. (2019) illustrano come la Gen-AI possa essere utilizzata per simulare l'effetto di modifiche genetiche, facilitando la selezione delle colture ottimali.

Inoltre, la Gen-AI trova applicazione nel miglioramento della sicurezza alimentare e nella tracciabilità della catena di approvvigionamento. Attraverso l'utilizzo di sistemi AI che possono generare e analizzare dati in tempo reale, è possibile monitorare la provenienza del cibo, le condizioni di stoccaggio e trasporto, garantendo la qualità e riducendo il rischio di contaminazione. Recenti studi (Ambika 2023; Pedro M., et al., 2023) evidenziano come le tecnologie blockchain e AI possano collaborare per creare sistemi di tracciabilità alimentare affidabili e trasparenti.

La Gen-AI permette, inoltre, di creare prodotti alimentari personalizzati in base alle preferenze nutrizionali e ai bisogni specifici dei consumatori. Utilizzando algoritmi di apprendimento automatico, è possibile sviluppare ricette su misura che tengano conto di allergie, intolleranze, obiettivi nutrizionali e preferenze di gusto (Ramakrishnan et al, 2023).

AgriGPT, ideato da un agricoltore francese tecnofilo, è un esempio di applicazione di AI generativa in agricoltura. Questa AI offre consulenze agricole personalizzate combinando dati agricoli, informazioni in tempo reale e un sistema di feedback utente attraverso un'interfaccia multi-modulare. Allenato su ampi set di dati che includono condizioni del suolo, climatiche e strategie contro i parassiti, inoltre fornisce consigli per migliorare la resa dei raccolti (Liu et al. 2023). Beneficiando delle funzionalità di ChatGPT, migliora anche la documentazione, la reportistica e il processo decisionale, contribuendo significativamente all'efficienza e produttività nel settore agricolo e promuovendo la sostenibilità.

Un settore emergente che beneficia della Gen-AI è lo sviluppo di alimenti alternativi, come le proteine vegetali e la carne coltivata in laboratorio (Liu et al, 2023). La capacità di simulare e ottimizzare processi biologici e chimici tramite algoritmi AI consente di esplorare nuove formulazioni alimentari che possono ridurre la dipendenza da agricoltura intensiva e allevamento, contribuendo alla sostenibilità ambientale. Da un punto di vista della supply chain management, la Gen-AI trova impiego nel migliorare la tracciabilità e l'efficienza della catena di approvvigionamento alimentare, algoritmi predittivi possono prevedere la domanda di prodotti agricoli, ottimizzare la logistica del trasporto e ridurre gli sprechi alimentari, contribuendo a una maggiore sostenibilità (Onyeaka et al., 2023).

Nonostante le premesse, l'applicazione della Gen-AI nel settore agri-food presenta diverse sfide, tra cui questioni etiche legate alla manipolazione genetica, l'accesso e l'interpretazione dei dati nonché la necessità di infrastrutture tecnologiche avanzate. È fondamentale che l'adozione di queste tecnologie proceda con una considerazione attenta delle implicazioni sociali, economiche ed ambientali, come sottolineato in studi che esaminano l'impatto dell'AI sull'agricoltura sostenibile e la sicurezza alimentare (Bronson & Knezevic, 2016).

Obiettivo dell'articolo. Il presente studio si propone di indagare i fattori che determinano l'adozione della Gen-AI, ponendo attenzione a come determinate variabili influenzano la propensione all'adozione di tale tecnologia, pertanto, lo studio muove dalle seguenti domande di ricerca:

RQ1: Quali sono i fattori che influenzano l'intenzione di adozione della Gen-AI tra gli operatori del settore agri-food?

RQ2: Il Management aziendale influenza l'adozione della tecnologia Gen-AI nel settore agri-food?

Attraverso l'applicazione di quadri teorici consolidati relativi all'adozione tecnologica, si persegue una valutazione olistica che considera le diverse variabili in gioco e il loro impatto sulle tendenze di adozione della Gen-AI nel settore agri-food. Lo studio intende ampliare la conoscenza circa le complesse dinamiche che influenzano l'adozione della Gen-AI nel settore agri-food, arricchendo così il dibattito teorico e offrendo spunti significativi in termini manageriali.

Metodologia. *Nei seguenti paragrafi, discuteremo la metodologia di raccolta dati, il questionario somministrato e le tecniche di analisi dati analitiche.*

Procedura di campionamento

La metodologia adottata in questo studio si avvale di un approccio quantitativo per l'analisi dei dati, focalizzandosi sull'elaborazione di informazioni numeriche ottenute attraverso l'impiego di questionari. La procedura metodologica si articola in due fasi principali. Inizialmente, la raccolta dati è stata effettuata mediante un questionario diffuso tramite la piattaforma online Qualtrics XM, nel lasso temporale esteso da novembre 2023 a febbraio 2024. Questa fase ha previsto l'invio di questionari ai dipendenti amministrativi operanti nel settore agroalimentare, registrando una partecipazione di 156 individui. Successivamente, nella seconda fase dell'indagine, l'analisi dei dati raccolti è stata condotta utilizzando il software statistico SPSS. È rilevante notare che, a seguito della progettazione del questionario che prevedeva la compilazione obbligatoria di tutte le domande, il dataset risultante non presenta valori mancanti.

Struttura questionario

La presente ricerca indaga l'intenzione di adozione delle tecnologie di Intelligenza Generativa Artificiale (Gen-AI) nel dominio agroalimentare, avvalendosi del quadro teorico fornito dal Modello di Accettazione della Tecnologia (Technology Acceptance Model, TAM) come delineato da Davis nel 1989. Il presupposto fondamentale di questa indagine è che l'innovazione tecnologica possieda un vantaggio relativo, come teorizzato da Rogers nel 1983, implicando che le innovazioni sono percepite come superiori rispetto alle precedenti soluzioni. Questo concetto di vantaggio relativo è stato efficacemente incorporato nel TAM e in studi successivi con l'obiettivo di analizzare come le percezioni di miglioramento e beneficio possano influenzare significativamente l'accettazione e l'adozione di nuove tecnologie da parte degli utenti.

In questo contesto, emerge come fattore cruciale il coinvolgimento del "Top management" nel facilitare o ostacolare l'adozione di nuove tecnologie (Barham et al., 2020). In letteratura è stato ampiamente evidenziato l'essenziale ruolo del "top management" nel facilitare il processo di adozione tecnologica nelle organizzazioni. Questa riconoscenza enfatizza come i dirigenti di alto livello siano pivotali non solo nel delineare la visione e la strategia aziendale ma anche nel fornire il supporto necessario o, al contrario, nell'agire come forza di inibizione verso l'innovazione tecnologica (Kumari & Singh, 2022). Al-Khatib (2023) sottolinea specificamente che l'efficacia con cui il top management naviga queste responsabilità può significativamente influenzare la capacità di un'organizzazione di abbracciare nuove tecnologie, sottolineando la loro influenza critica sull'esito dell'adozione tecnologica. Questo approccio olistico enfatizza l'importanza di considerare gli aspetti organizzativi e manageriali nell'analisi dell'accettazione tecnologica, contribuendo così a una comprensione più profonda del fenomeno. La rilevazione delle percezioni è stata effettuata attraverso un questionario strutturato su una scala Likert a cinque punti, variando da 1 ("Fortemente in disaccordo") a 5 ("Fortemente d'accordo"). Il questionario prevedeva un'introduzione dedicata alle tecnologie Gen-AI, sollecitando i partecipanti a riflettere su eventuali esperienze pregresse con tecnologie similari. Nell'ambito della nostra analisi, sono stati esaminati diversi costrutti. Il vantaggio relativo, considerato il precursore nel nostro studio, è stato valutato attraverso tre item specifici, mirando a sondare la percezione di superiorità ed efficacia della nuova tecnologia rispetto a soluzioni precedenti, in linea con quanto riportato da Sharma et al. (2022). In aggiunta, tre ulteriori costrutti derivati dal modello TAM-la percezione dell'utilità, la facilità d'uso percepita (Ma X. & Huo Y., 2023), e l'intenzione di adottare la Gen-AI (Chatterjee et al., 2021) sono stati inclusi per un'analisi comprensiva dell'accettazione tecnologica nel contesto agroalimentare. Per quanto riguarda la tecnica di analisi, la presente ricerca adotta metodologie avanzate di regressione lineare multipla per esaminare sia gli effetti diretti che quelli indiretti delle variabili indipendenti sulla variabile dipendente. L'elaborazione e l'analisi dei dati sono state condotte impiegando il software statistico SPSS. Prima di procedere con la verifica delle ipotesi di ricerca, i dati sono stati sottoposti a rigorosi test di validità e affidabilità, utilizzando le Correlazioni di Pearson per la validità e il Coefficiente Alpha di Cronbach per l'affidabilità. Per la formulazione del modello teorico, si delineano le ipotesi che fungono da pilastri per l'analisi e l'interpretazione dei comportamenti di accettazione tecnologica degli utenti.

H1: *La percezione di utilità influenza positivamente l'intenzione di adozione (Ma X. & Huo Y., 2023)*

H2: *La percezione di facilità d'uso influenza positivamente l'intenzione di adozione (Ma X. & Huo Y., 2023)*

H3a: *Il vantaggio relativo influenza positivamente la percezione di utilità (Al-Kathib, 2023)*

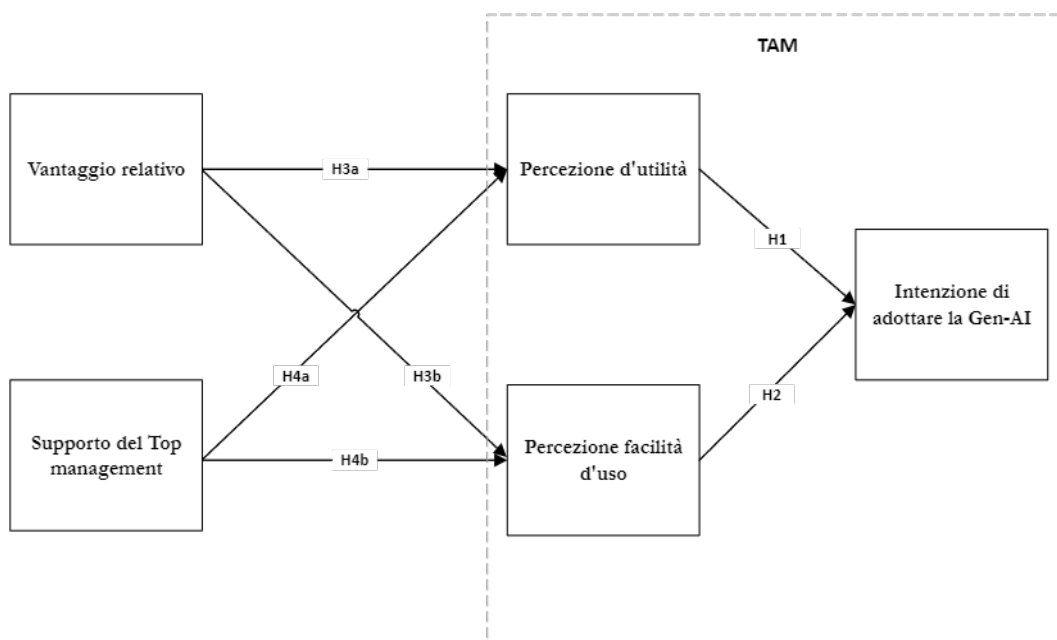
H3b: *Il vantaggio relativo influenza positivamente la percezione di facilità d'uso (Al-Kathib, 2023)*

H4a: *Il supporto dei dirigenti influenza positivamente la percezione di utilità (Al-Kathib, 2023)*

H4b: *Il supporto dei dirigenti influenza positivamente la percezione di facilità d'uso (Al-Kathib, 2023)*

La seguente immagine rappresenta le ipotesi attraverso le quali è stato sviluppato il modello.

Fig. 1: Modello teorico dell'intenzione comportamentale



Fonte: Elaborazione propria

Risultati. L'analisi empirica si caratterizza per la solidità statistica dei risultati ottenuti, in quanto risultano confermate l'adeguatezza e l'accuratezza del framework teorico impiegato. Il nostro studio evidenzia che l'intenzione di implementare la Gen-AI nel settore agri-food è positivamente correlata ai costrutti del TAM e, in modo indiretto dal Vantaggio relativo (RA). Tuttavia, emerge un'eccezione significativa riguardante l'influenza negativa esercitata dal supporto del Top management (TMS) sull'intenzione di adozione di questa nuova tecnologia, contrastando le aspettative iniziali. Si evidenzia, in particolare, l'importanza della Percezione di Utilità (PU) e della Percezione di Facilità d'Uso (PEOU) secondo il TAM, oltre al Vantaggio Relativo, come fattori critici che influenzano positivamente l'intenzione di implementare la Gen-AI nel settore agri-food. L'imprevisto impatto negativo derivante dal supporto del Top Management pone interrogativi di rilievo che aprono ad ulteriori analisi. Risulta significativo che due delle sei ipotesi testate non abbiano trovato conferma empirica, evidenziando un'influenza contraria rispetto all'intenzione di integrare la Gen-AI nel settore in esame.

Tab. 1: Analisi fattoriale confermativa per il modello di misurazione

Area	Costrutto	Cronbach's Alpha	AVE	CR	Item	Factor Loadings
TAM	Vantaggio relativo	0,858	0,783	0,915	RA1: La tecnologia GEN-AI migliora le prestazioni lavorative in modi migliori rispetto ad altre tecnologie	0,884
					RA2: La tecnologia GEN-AI aumenta la qualità lavorativa di più rispetto ad altre tecnologie	0,819
					RA3: La tecnologia GEN-AI consentirà di risparmiare sui costi.	0,947
	Percezione utilità	0,866	0,793	0,920	PU1: L'uso della tecnologia GEN-AI è utile nel mio lavoro	0,934
					PU2: L'uso della tecnologia GEN-AI mi aiuterebbe a realizzare le cose più rapidamente.	0,873
					PU3: L'uso della tecnologia GEN-AI ha aumentato la mia produttività.	0,863
	Percezione facilità d'uso	0,967	0,940	0,979	PEOU1: Imparare ad usare la tecnologia GEN-AI sarebbe facile per me	0,961
					PEOU2: L'interazione con la tecnologia GEN-AI sarebbe chiara e comprensibile per me.	0,962
					PEOU3: Utilizzare la tecnologia GEN-AI sarebbe facile per me	0,986
	Intenzione di adottare GEN-AI	0,931	0,830	0,951	IAA1: Penso che un sistema di lavoro basato sulla tecnologia GEN-AI sia vantaggioso per la nostra organizzazione	0,906
IAA2: Sono favorevole a un sistema di lavoro basato sulla tecnologia GEN-AI					0,936	
IAA3: Vorrei sfruttare al massimo il potenziale della tecnologia GEN-AI					0,891	
IAA4: Penso che l'utilizzo della tecnologia GEN-AI migliorerà la produttività della nostra organizzazione					0,911	

Tab. 2: Verifica delle ipotesi

HP.	RELAZIONE	DESCRIZIONE	Valutazione
H1	PU -> IA	La percezione di utilità influenza positivamente l'intenzione di adozione	Confermata
H2	PEOU -> IA	La percezione di facilità d'uso influenza positivamente l'intenzione di adozione	Confermata
H3a	RA -> PU	Il vantaggio relativo influenza positivamente la percezione di utilità	Confermata
H3b	RA -> PEOU	Il vantaggio relativo influenza positivamente la percezione di facilità d'uso	Confermata
H5a	TMS -> PU	Il supporto dei dirigenti influenza positivamente la percezione di utilità	Non Confermata
H5b	TMS -> PEOU	Il supporto dei dirigenti influenza positivamente la percezione di facilità d'uso	Non Confermata

Limiti della ricerca. Il presente studio consta di un primo limite; considerati i costrutti presi in considerazione, l'indagine prevede tempi di realizzazione più estesi e un impiego di risorse maggiori rispetto a studi esclusivamente quantitativi. La comprensione del fenomeno, inoltre, può richiedere di integrare l'analisi quantitativa con interviste qualitative approfondite rivolte a manager, con lo scopo di ottenere una comprensione più sfaccettata dei dati quantitativi raccolti. Pertanto, si contempla l'adozione di un approccio metodologico misto in fasi successive della ricerca. Questa strategia permetterebbe di abbracciare sia l'approccio qualitativo, focalizzato sull'interpretazione e la comprensione profonda dei significati, sia quello quantitativo, orientato verso la raccolta e l'analisi di dati numerici.

L'impiego congiunto di metodologie qualitative e quantitative mira a rafforzare la validità complessiva dei dati raccolti, consentendo un'esplorazione più ricca e multilivello del fenomeno di studio.

Implicazioni manageriali. La Gen-AI presenta significative possibilità di utilizzo nel settore agricolo, meritevoli di ulteriore approfondimento. Muovendo dalle ipotesi del modello, la ricerca getta luce sulle dinamiche organizzative e sulle sfide manageriali coinvolte nel favorire una cultura di innovazione e adozione tecnologica all'interno del settore agroalimentare. Nonostante l'evoluzione dei modelli organizzativi in vari settori di produzione, i nostri risultati indicano la necessità di sforzi mirati per coltivare una cultura imprenditoriale che sostenga l'adozione di nuove tecnologie, inclusa l'IA generativa. In particolare, l'analisi empirica condotta rivela che, sebbene le aziende agroalimentari mostrino una preparazione organizzativa, il supporto del Top Management nel settore Agri-food non è completamente orientato verso l'adozione e l'implementazione della Gen-AI, influenzando negativamente e indirettamente la percezione di utilità e di facilità d'uso della tecnologia. Questo sottolinea l'importanza di allineare le priorità organizzative e il supporto della leadership con la necessità di integrare tecnologie innovative per guidare la crescita sostenibile e la competitività all'interno del settore agroalimentare. Inoltre, questo studio sottolinea il ruolo centrale svolto dalla percezione dell'utilità e dalla facilità d'uso nel plasmare le intenzioni di adozione della Gen-AI nel settore agroalimentare. Questi due fattori si sono rivelati per esercitare un'influenza diretta e significativa sull'intenzione di adottare le tecnologie Gen-AI, evidenziando la loro importanza critica nel guidare i comportamenti di adozione tra i diversi stakeholder operanti nel settore Agri-food.

Originalità del paper. Lo studio si posiziona all'avanguardia della ricerca accademica, indagando un tema relativamente poco esplorato: l'impatto della struttura organizzativa e del coinvolgimento del top management nel processo di adozione della Generative Artificial Intelligence (Gen-AI) nel settore agri-food. La rilevanza del tema è amplificata dalla scarsità di studi pregressi che collegano direttamente l'intelligenza artificiale con le pratiche e le strategie di gestione nel settore agricolo, segnalando un gap significativo nella letteratura esistente. L'originalità del paper è ulteriormente sottolineata dal suo approccio metodologico e teorico, in quanto propone un modello innovativo che integra due fattori critici - il vantaggio relativo e l'engagement del top management - come precursori dell'adozione della Gen-AI nell'agri-food. Questa prospettiva bidimensionale non solo arricchisce il dibattito accademico sull'importanza della tecnologia Gen-AI nel settore agri-food ma apre ulteriori nuovi orizzonti idonei a comprendere come le dinamiche interne alle organizzazioni possano influenzare l'efficacia e l'efficienza dell'adozione tecnologica.

Inoltre, i risultati dello studio forniscono evidenze empiriche che illuminano aspetti poco noti dell'intersezione tra Gen-AI e agri-food, presentando implicazioni teoriche e manageriali significative. La dimostrazione di come il vantaggio relativo percepito e il sostegno attivo del top management agiscano come leve cruciali per facilitare l'integrazione della Gen-AI nel settore agri-food, offre un contributo sostanziale alla comprensione delle strategie di adozione tecnologica. Questi risultati contribuiscono ad implementare la letteratura esistente e forniscono, ulteriormente, elementi per ricerche future, incoraggiando ulteriori indagini sull'impatto delle variabili organizzative e di leadership nel contesto dell'innovazione tecnologica nel settore agri-food.

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Managing services in tourism destinations through Artificial Intelligence and Machine learning: The Data for Destination Model

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Abstract

How can services in tourism destinations be successfully managed? Addressing this question is crucial in tourism management given the significant role played by destinations' multi-level actors in shaping development paths worldwide. Some paths generate positive environmental, economic and social effects for all the actors involved, thus appearing sustainable, while others have negative implications in terms of sustainability. It is also relevant for competitiveness of both firms and destinations. The understanding and managing of the complex interactions connected to multi-dimensionality of tourism destinations is crucial, although currently posited as a major knowledge gap, by both scholars and practitioners. In response, this study proposes and applies a data-driven approach to Destination modeling, developed by the authors together with the Italian Institute for Tourism Research following the participatory action research approach. The proposed model is based on two key assumptions: 1) tourism destinations can be understood as socio-ecological systems where relationships among the multi-level actors involved are of dialectical nature, thus requiring mutual adaptation, and 2) data about such relationships can be gathered and made available to structure, systematize and organize a huge range of information according to complex artificial intelligence and machine learning processes. Once real time information is integrated from various sources it can drive complex analysis about the supply and demand sides of tourism destinations. Preliminary results emerging from the application of the proposed model confirm its large application for decision makers and policymakers to adopt shared adaptation strategies, suitable for creating environmental, economic and social, value. The on-line and real time access to the above intelligent services can help inter-organizational knowledge transfer processes, strategic intentionality, multi-stakeholder decision making, systemic approach, social responsibility, and tourist experience of decision makers and policymakers.

Key words: *Tourism services; Artificial Intelligence; Machine Learning; Destination management model; Sustainable tourism; Participatory action research approach.*

Framing of the research. *How can services in tourism destinations be successfully managed? Addressing this question is crucial in tourism management given the significant role played by destinations' multi-level actors in shaping (un)sustainable development paths worldwide (Bramwell et al., 2017; UN, 2015). This role concerns tourism firms, various other organizations, local and multi-local institutions, local communities, and tourists that by interacting each other co-determine the tourism offering enhancing (or not) regional identities within destinations, thus competitiveness (Aldebert et al., 2011; Beritelli et al., 2014; Paniccia and Baiocco, 2021).*

Over the last decades, great efforts of research have been devoted to analyzing the main structural characteristics of destinations together with the key phases of their life cycle, where collaboration between firms and institutions is crucial (Butler, 1980; Kubickova and Martin, 2020). In this regard, attention has been given to elaborating conceptual models and set of indicators aimed at analyzing and enhancing the capacity of tourism destinations to create shared value (Porter and Kramer, 2011) by activating synergies at both local and multi-local levels among the aforesaid actors (e.g., Crouch and Ritchie, 1999; Dwyer and Kim, 2003; Enright and Newton, 2004; Mazanec et al., 2007, Hong, 2008; Knežević Cvelbar et al., 2016).

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What emerges from the analysis of prior models is that while scholarly consensus exists on the importance of considering the influence of interconnected factors—institutional, industrial, and natural types—that are unique and distinctive of the local contexts of a destination to progress toward sustainability (Norgaard, 1994) and thus for competitiveness, the complexity of the interactions among the various multi-level actors of a destination (Benson, 1977; Baiocco and Paniccia, 2023) is still not completely taken into consideration. Significantly, the majority of prior models focus on the supply-side of the destination without considering it in connection with the side of the demand (Volgger et al., 2021). Also, the level of digital transformation of tourism destinations is still limitedly considered (Ribeiro et al., 2020) and most of the proposed indicators are difficult to be calculated given the limited availability of data at local levels (Font et al., 2023).

Clearly, the direct applicability of such models results limited, as it is the possibility for decision makers and policymakers to share updated and adequate information able to trigger interactive learning processes (Paniccia et al., 2024) and support the creative use of the specific factors of each tourism destinations (Pilotti et al., 2013; Donthu et al., 2020, Paniccia and Baiocco, 2021).

Purpose of the paper. This study proposes and applies a data driven approach to model destinations (Data for Destination model, also DfD, hereafter), developed by the authors in collaboration with the Italian Institute for Tourism Research (ISNART). DfD aims to provide decision makers and policymakers with an ecosystem of digital services to better observe, comprehend and manage the complex interactions associated with the multi-dimensionality of tourism destinations.

Methodology. The DfD Model was developed during the period December 2022-March 2024 following the participatory action research approach (Whyte, 1991). This approach involves researching with practitioners, to collectively bring about desirable changes in the object of analysis - in this case, the DfD Model - through iterative cycles of action and reflection. In particular, researchers involved are from different disciplines, namely management, computer science, and statistics with previous research in the field of sustainable tourism management, artificial intelligence, and machine learning. Practitioners come from ISNART, that is the organization of the Italian Chamber System with the mission of supporting the Chambers of Commerce particularly in the activities related to the “enhancement of cultural heritage as well as development and promotion of tourism” introduced by the Italian law in 2016, and Reveal srl, a spin-off company from Tor Vergata University of Rome specialized in artificial intelligence technologies.

Accordingly, the two key assumptions underlying the model are the following.

First, tourism destinations can be understood as socio-ecological systems constituted by a plurality of reciprocally functional sub-systems where inter- and intra-relationships are of dialectical nature (Paniccia and Baiocco, 2021; Baiocco et al., 2023). This means that the dynamics of interactions and mutual feedback between multi-level actors of a destination (i.e., tourism firms, various other organizations, local and multi-local institutions, local communities, and tourists) drive the development of the destination tourism offering capable (or not) to satisfy tourist needs and also to create environmental, economic and social value for all the actors involved. In this context, inter-organizational knowledge transfer processes, strategic intentionality, multi-stakeholder decision making, systemic approach, social responsibility, and tourist experience have been identified as key determinants of effective co-evolutionary adaptations between the various actors at multiple levels within destinations (Paniccia and Leoni, 2019; Cristofaro et al., 2020).

Second. Artificial intelligence (Turing, 1950; Brachman and Levesque, 2004) and machine learning (Mitchell, 1997) can be effectively used to collect and integrate real-time data about the aforementioned phenomena from heterogeneous sources and timely create large bodies of location specific economic, social and cultural information and knowledge. These allows to automatically structure, design and organize a data lake explicitly modeling a huge range of phenomena about tourism destinations. The data lake integrates all evidences according to a complex knowledge model that aims at support the later information processing steps such as classification and clustering of tourism phenomena, inference in What-If analysis, sentiment and reputation assessment (Mehraliyev et al., 2020; Wankhade et al., 2022; Basile et al., 2018) as well as economic forecasting.

Based on the above, the DfD Model provides the logical structuring of the data according to an explicit knowledge representation formalism (Brachman and Levesque, 1980) and can be thought of as a set of integrated knowledge graphs, including:

- Tourism Destinations represented on the basis of the multidimensional homogeneous characteristics of their corresponding municipalities, regardless of whether these municipalities are geographically connected or not. Such representation operates on municipalities characterized by the number of inhabitants, and it thus allows to distinctively describe: small municipalities (up to 15 thousand inhabitants), medium municipalities (over 15 thousand inhabitants up to 50 thousand inhabitants), large municipalities (over 50 thousand inhabitants up to 400 thousand inhabitants), metropolis (over 400 thousand inhabitants). Such breakdown of destinations by size is one qualifying aspect for DfD Model, as it supports consistent comparison across meaningful contexts (e.g., similar in size) and measure in different and specific manners destinations, such as Rome, with respect to others based on suburbs or small municipalities.
- Tourism-related phenomena as explicit and measurable characteristics of destinations, such as, economic descriptors (e.g., the municipal expenditure for tourism development), cultural heritage sites, industrial factors such as the levels of investment, the typology of industries or the distribution of accommodation/gastronomic services specific to a target destination, and finally, reputation indexes, directly observable from digital tourism services (travelers’ reviews) or from newspaper.

- A complex relational model that allows to model multidimensional economic facts (quantitative indicators) about individual tourism destinations as evidences emerging from the controlled integration of large bodies of data across the Italian system of destinations along time, that is:
 - o sets of indicators on tourism dimensions and their relative importance (weight) allow the systems to detect and measure the relative importance a dimension has in relation to the specific tourism destination under evaluation;
 - o positional distributional metrics are used to compare destinations, i.e., to consistently represent how an individual municipality ranks on a specific aspect of the tourism destination under evaluation. This measure is quantitative but mainly relative, as it is computed with respect to other destinations that are part of similar clusters (e.g., destination of similar dimensions).
 - o a clear model for the individual indicators related to a tourism destination that makes each dimension/indicator immediately comparable with that of other tourism destinations.

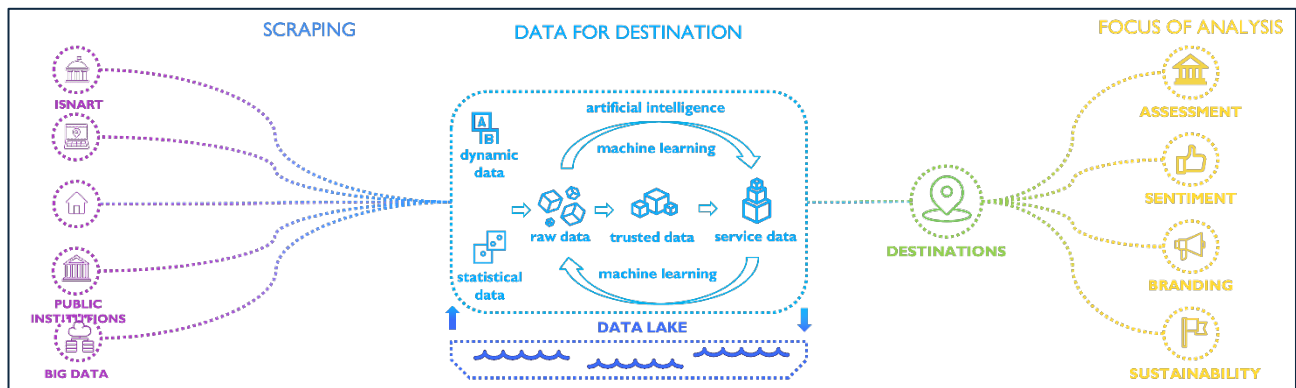
Furthermore, DfD is supported by a software system integrating different artificial intelligence services discussed in Croce et al. (2013), Castellucci et al. (2016), Filice et al. (2018) designed to structure, systematize and organize the single data lake currently including: i) approximately 45.5 million statistical and dynamic open data coming from various certified sources (including Istat, Bank of Italy, Infocamere) covering 100% of Italian municipalities (7,926) classified by Istat (2022) considering their tourism density, ii) about 4 million reviews and iii) 708,000 scraped web pages.

The overall data organized in the platform allows to derive 74 different variables expressing crucial information for four different focuses of analysis, namely:

- the integration of destinations' tourism offering by considering quantitative data related to six pillars, namely tourism products, tourists, infrastructures, firms, local community, and governance (Assessment focus of analysis).
- the satisfaction of tourists through the analysis of their so-called sentiment associated with attractions, activities and products of the destination conducted using natural language processing and machine learning techniques (Sentiment focus of analysis);
- the positioning, reputation and engagement of the destination brand by using dynamic data from local and national media (Branding focus of analysis);
- the environmental, social and economic impacts brought about by tourism development in the local context of a destination by using quantitative data (Sustainability focus of analysis).

A logical architecture for DfD can be represented as in Figure 1.

Figure 1. Logical architecture of DfD Model



Results. In this section we present the four focuses of analysis of the Model and apply them to the Italian destination called “Costa dei Trabocchi”, as a concrete example of operational use of the system. This destination consists of nine municipalities located along the coast of the Abruzzo Region in southern Italy. At the end of 2022, this Region contributed a 3% share to the tourism demand aimed at southern Italian regions including islands (Banca d’Italia, 2023). As of the same date, more than 15,000 tourism firms and 57,000 tourism employees were active in the Region, accounting for 7.6% and 8.1%, respectively, of the tourism firms and employees in southern Italy including the islands (ISNART, 2023).

Assessment focus of analysis

This focus of analysis allows to evaluate the integration of destinations' tourism offering by calculating a specific set of indicators related to the following six pillars:

- Tourism products, including the tangible and intangible resources of a destination in relation to both the ability of the destination to attract tourists and the usability of such resources by tourists;
- Tourists, representing the tourism demand attracted by the destination considering tourists' types, motivations, flows and related seasonality;

- Infrastructures, that is the accessibility (physical and digital) of the destination by considering toll booths, train stations, civil airports, ports, wireless and fiber optic infrastructure for Internet connection, and the level of internal mobility (public and private) of the destination;
- Firms, including the size, characteristics and dynamics of firms in the business fabric of the destination both in general and in relation to the tourism supply chain;
- Local community, that is the characteristics of the local community including its relationships with tourism firms and institutions;
- Governance, that is the degree to which institutions, firms and various destination actors share strategies and objectives referred to the tourism sector.

Thus, in addition to factors related to the supply-side of the tourism destination traditionally considered in prior models (e.g., Crouch and Ritchie, 1999; Hong, 2008; Knežević Cvelbar et al., 2016), the Model allows to consider some specific aspects of the tourism demand as recommended by scholars (Volgger et al., 2021) as well as the level of digital transformation of destinations (Ribeiro et al., 2020).

Table 1 identifies pillars and related indicators of the Assessment focus of analysis and its application to Costa dei Trabocchi.

Table 1. Assessment focus of analysis applied to Costa dei Trabocchi

Pillars	Indicators	Indicator Assessment	Pillar Assessment
Tourism products	Index of cultural places attractiveness	20%	57%
	Touristicity Index	80%	
	Index of tourism attractors popularity	80%	
	Municipal expenditure for tourism development	80%	
	Municipal expenditure for the protection and enhancement	20%	
Tourists	Index of tourism density	80%	79%
	Share of international tourism	60%	
	Trend of tourism attendance over the last 5 years	80%	
	Average attendance of tourists	95%	
Infrastructures	Reachability index	80%	55%
	Internal mobility index	95%	
	Presence of rail infrastructure	20%	
	Presence of fiber connection	40%	
	Presence of wireless connection	20%	
Firms	Municipal expenditure for transportation	20%	68%
	Consistency of the business fabric	40%	
	Vitality of the business fabric	40%	
	Consistency of the tourism supply chain	60%	
	Relevance of the tourism supply chain	80%	
	Change in the tourism supply chain	80%	
	N. of accommodation firms (hotel and non-hotel)	80%	
	N. of bed-places (hotel and non-hotel)	80%	
N. of catering firms	80%		
Local community	Consistency of the business fabric	60%	71%
	Age index	60%	
	Depopulation rate over the past 20 years	60%	
	Participation in local elections	60%	
	N. of Airbnb facilities (accommodation/rooms)	80%	
	Social security index	95%	
Governance	N. of employees working in the tourism sector	60%	61%
	Average revenue of Airbnb facilities (accommodation/rooms)	80%	
	Application of tourist tax	60%	
	Vitality of local government	60%	
	Municipal investment in roads and streets	20%	
	Event planning	20%	
	Municipal investment for protection and enhancement of municipal assets and activities	95%	
	Recognitions and memberships (e.g., certifications, membership in associations)	40%	
Application of tourist tax	95%		
Integration level of the destination's tourism offering			65%

Overall, the integration level of the tourism offering of Costa dei Trabocchi is 65%, ranking in the fourth quintile of measurement, reflecting the fact that none of the six pillars rank in the highest quintile of measurement.

The highest value is recorded by the set of indicators related to the tourist pillar (79%) followed by the local community pillar (71%), both in the fourth measurement quintile. Likewise, the firm and governance pillars record overall values within the fourth measurement quintile (68% and 61% respectively) signaling particular areas of attention, i.e., the consistency and vitality of businesses fabric and municipal investment in roads and streets and event planning.

The need for ameliorating actions in these areas is confirmed by the value recorded by the infrastructure and the tourism products pillars (55% and 57% percent) both in the third quintile of measurement. The infrastructure pillar reflects the critical issues related to both physical (particularly, rail infrastructure) and digital (mainly, wireless) accessibility, as well as spending by municipalities on transportation. The tourist products pillar shows limited attractiveness of museums, monuments, archaeological areas and state museum circuits and low municipal spending on the protection and enhancement of cultural goods and activities.

Sentiment focus of analysis

The sentiment focus of analysis follows the methods discussed in Croce et al. (2013) and Castellucci et al. (2016) by which the level of tourists' satisfaction is analyzed with reference to particular aspects of tourism destinations offerings. In particular, through the analysis of perceptive data conducted using natural language processing and machine learning techniques, this focus of analysis allows to investigate the so-called tourist sentiment associated with attractions, activities and products (e.g., snow, nature tourism, wellness) of tourism destinations. Perceptions of services offered by firms, experiences lived in the destination and the tourism destination as a whole are the dimensions of tourists' sentiment considered by the DfD Model to which various sub-dimensions are associated.

For each of the above sentiment dimensions, the system estimates a polarity judgment (positive, neutral, negative). Taking these dimensions into account consists in considering what makes a destination competitive (or not) for those who have decided to visit it, as recommended in Cronjé and Plessis (2020).

Thus, this focus of analysis appears particularly useful for assessing the engagement capability of tourism firms as well as of destinations and the online reputation of both. It is worth noting that this type of analysis is still scarcely used in the tourism sector despite the fact that it is one of the most influenced by online reputation (Ali et al., 2021).

Table 2 identifies dimensions and sub-dimensions of the Sentiment focus of analysis related to Costa dei Trabocchi.

Table 2. Sentiment focus of analysis applied to Costa dei Trabocchi

Sentiment dimensions	Sentiment sub-dimensions	Subdimension satisfaction	Dimension satisfaction
Perception of services	Cost	95%	70%
	Pollution/Cleaning	95%	
	Rental	95%	
	Personnel	60%	
	Typical products	95%	
	Health and wellness	0%	
	Services	80%	
	Accommodation	0%	
	Catering	80%	
	Commercial activities	95%	
	Information	80%	
	Events organization	95%	
	Tourist guide services	40%	
Individual perception	Emotional dimension	95%	84%
	Artistic dimension	95%	
	Naturalistic dimension	95%	
	Food and wine dimension	80%	
	Physical dimension	60%	
	Experiential dimension	60%	
Overall perception	Availability	95%	91%
	Organization	80%	
	Reachability	95%	
	General	95%	
Satisfaction level of tourism demand			77%

The level of satisfaction of tourism demand regarding the offer of Costa dei Trabocchi is of 77% in the fourth quintile of measurement.

In view of the positioning of the dimensions “overall perception” and “individual perception” in the best quintile of measurement, the indicated level of satisfaction of tourism demand seems to be mainly affected by the judgments expressed with reference to the perception of the quality of services. In this regard, tourists’ negative judgments associated with this dimension amount to 29% of the total judgments made (Figure 2) compared with 14% of the negative judgments associated with the individual perception (Figure 3) and overall perception (Figure 4) dimensions. It is worth noting that individual perception is associated with a high percentage of neutral judgments (21%) relative to the experiential dimension.

Figure 2. Perception of services - Costa dei Trabocchi

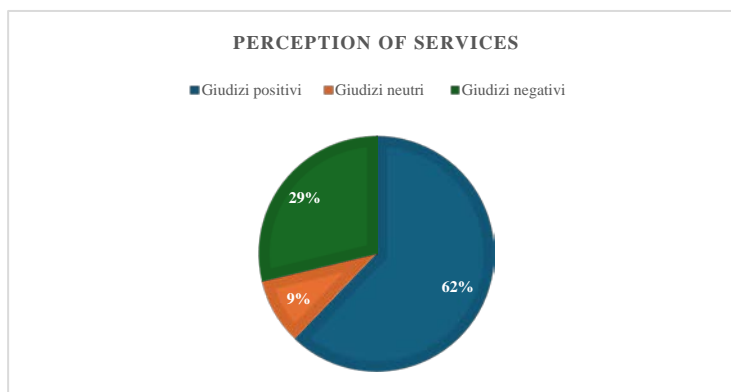


Figure 3. Individual perception - Costa dei Trabocchi

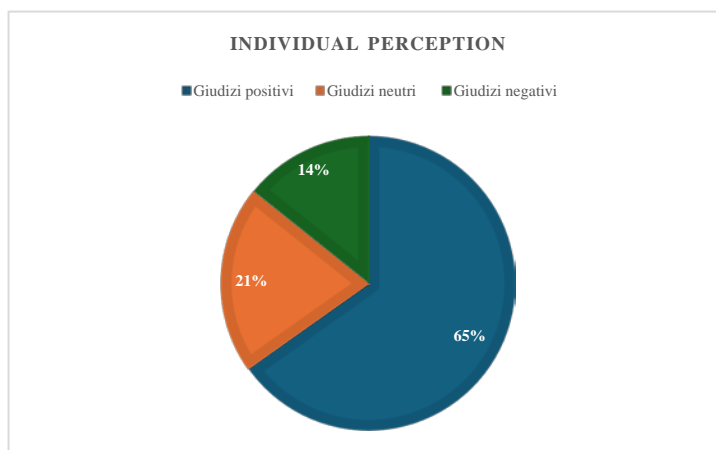
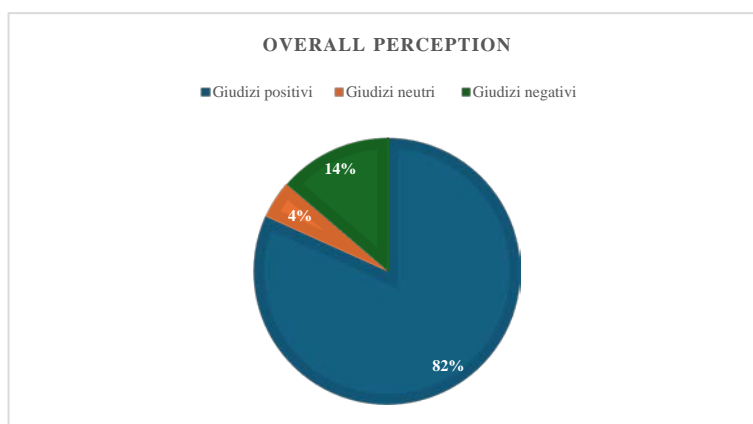


Figure 4. Overall perception - Costa dei Trabocchi



Branding focus of analysis

This focus of analysis makes it possible to assess the attractiveness of tourism destinations through a dynamic dataset from local and national media according to methodologies.

Specifically, what is here considered are the quantitative, the perceptual and the dynamic dimensions of destination attractiveness, by taking into account relevant news in local and national media related to tourism and culture, safety, and environment. Media news are automatically classified according to Croce et al. (2013), Castellucci et al. (2016), and Filice et al. (2018) along the following semantic dimensions:

- tourism and culture: events, culture, tourism;
- security: robberies, riots, scams, mafia, accidents, traffic, femicides, serial murders, racism, violence;
- environments: disasters, climate and pollution.

As a consequence, the branding analysis provide information on the positioning, reputation and engagement of the destination brand, that are acknowledged as necessary elements for strong brand value (including monetary value) to be achieved (Kotler et al., 2017).

Table 3 identifies dimensions and sub-dimensions of the Branding focus of analysis and its application to Costa dei Trabocchi.

Table 3. Branding focus of analysis applied to Costa dei Trabocchi

Branding dimensions	Branding sub-dimensions	Branding sub-dimension Outcome	Branding dimension Outcome
Quantitative Volume of relevant news on tourism and culture, safety and environment (Positioning)	Positioning tourism and culture	60%	66%
	Positioning safety	60%	
	Positioning environment	80%	
Perceptive Volume of relevant news with "positive" or "negative" impact on tourism and culture, safety and environment (Reputation)	Reputation tourism and culture	95%	95%
	Reputation safety	95%	
	Reputation environment	95%	
Dynamic Trend period T/period T - Δ of relevant news on tourism and culture, safety and environment (Engagement)	Engagement tourism and culture	95%	95%
	Engagement safety	95%	
	Engagement environment	95%	
Level of tourism appeal			85%

The level of tourism appeal of Costa dei Trabocchi is of 85% percent in the fifth measurement quintile. The appeal of the destination is affected by the value of the quantitative dimension (66%), which is in the fourth quintile of measurement. In turn, this dimension is particularly affected by the volume of relevant news about safety and tourism and culture. The perceptual and dynamic dimensions of Costa dei Trabocchi attractiveness signal the destination's good reputation and capacity for engagement in all areas considered (tourism and culture, safety and environment).

Sustainability focus of analysis

The Sustainability focus of analysis, still under development at the time of this study, makes it possible to assess through quantitative data analysis the environmental, economic, and social impacts of tourism destination development.

In particular, this focus of analysis addresses the need to create indicators related to the three dimensions of sustainability (European Commission, 2016; Baiocco et al., 2013) by helping to enrich existing models mainly focused on single dimensions or at most two of the three. Finally, taking into consideration the local dimension of sustainable development (Norgaard, 1994), the focus of the analysis is on the interdependencies and interactions among the three dimensions of sustainability at the local level of tourism destinations and the impact therein determined by the tourism phenomenon as a lever to progress towards (un)sustainability by bringing out (or not) the system of local qualities (Pilotti et al., 2013; Donthu et al., 2020).

Table 4 identifies sustainability dimensions and indicators implemented so far by the Model.

Table 4. Sustainability focus of analysis

Sustainability dimensions	Sustainability indicators
Environmental	Index of municipal land consumption
	Index of municipal fragmentation
	Index of population density per km ²
	Index of waste attributable to municipal tourism consumption
Economic	Index of municipal waste collection related to tourism
	Municipal per capita income
	Municipal entrepreneurship index
Social	Employment in the tourism sector at municipal level
	Index of municipal tourism pressure
	Average length of stay of tourists at municipal level
	Index of local community social responsibility index
	Index of corporate social responsibility

Research limitations. *The DfD Model is fully developed except for the Sustainability focus of analysis that is still under construction. Moreover, future developments include the introduction of additional destinations' classification criteria that take into account, for example, other structural characteristics of destinations (e.g., destinations in rural, urban, seaside, mountainous areas) and specific market targets (including art cities, boroughs, winter sports resorts, hiking and walking, seaside). Also, an extended model that integrates Assessment, Sentiment, Branding and Sustainability focuses of analysis is under consideration.*

Managerial implications. *The application of the Model helps to identify Costa dei Trabocchi as a destination endowed with specific natural, cultural, social and economic factors capable of attracting and satisfying tourism demand whose potential however is only partially exploited. This destination can thus be considered as a system in the process of completion (Barile et al., 2018; Paniccia and Baiocco, 2021). In fact, what emerges is the need for more effective interactions between the various actors operating at multiple levels of Costa dei Trabocchi in order to overcome the main critical issues related to physical and digital accessibility and the lack of coordinated initiatives to ensure the safety of places as well as their promotion.*

Moreover, and in connection with the above, the DfD focuses of analysis have generated a wide range of relevant, reliable, comparable, up-to-date information related to multiple aspects of the destinations under analysis. Such information is particularly useful for planning ameliorating actions. This is in line with the need highlighted in the tourism literature for appropriate methodologies, specific indicators, and associated targets for ongoing verification of achievements (Font et al., 2023; Baiocco and Paniccia, 2023).

Thus, preliminary results emerging from the application of the Model suggest to consider it a valid tool for decision makers and policymakers to solve common problems by sharing plans and coordinating actions (inter-organizational knowledge transfer processes). In fact, understanding the mutually functional relationship that binds the multiple actors operating at multiple levels of a tourism destination helps the strategic intentionality of both decision makers and policymakers to cooperate, involving also communities, bringing different skills and professionalism to bear on integrated actions and implementing strategies by having a common vision of the vocations of the places. We derive from this the usefulness of the model in supporting careful planning of the enhancement of destinations and firms' identities based on integrated actions that require the different actors in the destination to equip themselves with flexibility, adaptability and durability (systemic approach and multi-stakeholder decision-making processes). In this context, the Model is also useful for designing interventions oriented toward the sustainable development of the destination (social responsibility), based on a balanced relationship between environmental, economic and social needs.

Furthermore, the DfD helps to intercept, in satisfactory quantitative and qualitative terms, relevant segments of tourist demand (tourist experience). Particularly, the Sentiment focus of analysis appears useful in identifying which segments of tourism demand can find the highest satisfaction in relation to the destination offering. Also, the aforementioned focus of analysis offers to decision makers and policymakers an important knowledge base for a serious and professional work of self-reading in an identity key, reconnaissance of their resources and their strategic reorganization taking into account the perceptions that tourists have regarding the quality of services, the lived experience and the destination as a whole. In connection with the above, the branding focus of analysis is particularly useful for thinking about the message to be conveyed about the tourist destination offering by emphasizing the relevance of places in relation to relevant segments of tourist demand. The Model also allows for continuous feedback processes, i.e., analysis, evaluation and monitoring of the actions carried out and in particular of the effects of these on the sustainability, and thus on competitiveness of both firms and destinations, to ensure that the actions taken endure, and improve, over time.

Originality of the paper. *This paper discusses a methodological framework and a complex software system that responds to a lively need in tourism management research and practice. It allows to better and concretely understand how the complex interactions connected to multi-dimensionality of tourism destinations can be effectively managed. In doing so, it adopts an inter-disciplinary approach integrating machine learning and artificial intelligence methods (Croce et al, 2013; Filice et al., 2018) with economic modeling of the phenomena, whose particular value allows to deal with the increased complexity in tourism (Paniccia and Baiocco, 2021; Volgger et al., 2021).*

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The Future of Digital Technologies: AI-Driven Interfaces for Universal Usability

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Abstract

In the evolving landscape of digital technology, the integration of Artificial Intelligence (AI) into user interface design has emerged as a pivotal factor in democratizing access to technology and enhancing user experience. This paper investigates the transformative impact of AI-driven conversational interfaces on the design and usability of digital platforms, with a particular focus on engaging the next generation of users. Through a quantitative study involving 200 young individuals, we explore their perceptions, experiences, and expectations regarding current navigation interfaces and future paradigms of user interaction. The research highlights a paradigm shift towards conversational models that facilitate more intuitive, personalized, and engaging online searches, transforming the act of seeking information from a transactional process into an interactive learning journey. Our findings suggest that AI has the potential to significantly enrich user interface design, making digital experiences more accessible and enjoyable across diverse demographic groups. This paper contributes to the literature by offering new insights into the role of AI in creating inclusive digital environments and setting the stage for future investigations into the democratization of technology access. By bridging a critical gap in existing research, this study not only enriches the academic discourse but also provides practical guidance for leveraging AI to enhance user engagement and interface design in the digital age.

Key words: Society 5.0; digital divide; universal design; AI-driven interfaces; democratization of technology.

Framing of the research. *Emerging technologies have transitioned from being mere accessories to necessities in what is now termed Society 5.0 - a concept that integrates technology into daily life for a sustainable future. Holford (2019) emphasized the role of technology in fostering creative organizations, highlighting its increasing impact on business activities and the opportunities it presents. Human Computer Interaction research, with its roots in diverse fields such as computer science, communication, and psychology, has played a pivotal role in enhancing our understanding of the interaction between humans and technology, particularly as it relates to management information systems (Zhang & Li, 2005; Germonprez et al., 2009).*

However, as Dai (2009) noted, the adoption of Digital Technologies (DTs) varies across companies of different sizes and structures. Nieto and Fernandez (2005) further explored this disparity, pointing out that while large companies are well-equipped to harness technology, small and medium enterprises (SMEs) could benefit even more due to their limited access to resources and markets. This resource limitation has widened the technological adoption gap, making insights into the impact of Internet usage on efficiency and competitiveness crucial for SMEs in the global knowledge economy. The growing era of Human-AI Interaction adds a new dimension to this landscape, as AI becomes an agent with decision-making capabilities, affecting working and everyday lives (Virvou, 2022). A recent study by MIT Sloan Management Review found that more than 80% of organizations see digital technologies such as AI as a strategic opportunity, and almost 85% see AI as a way to achieve competitive advantage (Ransbotham et al., 2017). Buoyed by recent advances in machine learning, the general field of AI is well-positioned to solve problems across diverse domains, and it has been referred to as the most important general-purpose technology of our era (Erik Brynjolfsson et al., 2017). Regarding the adoption of digital technologies, two distinct research streams have emerged over time: technology as a Universal Design and the digital divide theory (Van Dijck, 2003). On one side Universal Design (UD), as defined by Tobias (2003), originally aimed to make the internet accessible to people with disabilities, identifying the high prices and scarce information as barriers. However, Stephanidis (2022) expanded this concept, arguing that UD is not just about disabilities but about inclusivity for all, evident in its application across various engineering disciplines.

On the digital divide front, Van Dijk and Hacker (2003) identified several barriers to widespread technology adoption, including lack of digital experience, absence of computers and network connections, insufficient digital skills, and lack of significant usage opportunities. They highlighted the user-unfriendliness of PCs and networks as major obstacles to

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adoption by companies and individuals. As we consider the implications of these theories, the contributions of Human Computer Interaction and AI to the theory and practice of user interfaces become increasingly relevant, calling for more research on trustworthy and explainable AI to ensure usability in human-machine interactions (Virvou, 2022; Germonprez, Hess, & Russo, 2009).

This work delves into the evolution of Human-Computer Interaction (HCI) theory, illustrating that there was, and continues to be, an opportunity to systematically enrich the existing body of HCI knowledge and design practices. It emphasizes how the development of toolkits is already underway, bringing complex technologies like Artificial Intelligence (AI) to the masses. Furthermore, the chapter sheds light on the importance of these toolkits by examining their ongoing impact and identifying limitations when deployed in real-world scenarios, a concept explored by Dibia et al. (2019).

Democratization of technology

The challenge of ensuring universal access to technology and equipping individuals with the necessary skills to navigate the digital landscape has been an ongoing issue. The literature is replete with evidence suggesting that usability and user experience are critical determinants of technology acceptance and adoption (Nielsen, 1993; Davis, 1989). Users frequently encounter obstacles when navigating poorly designed interfaces, leading to frustration and abandonment of potentially valuable digital tools (Norman, 2013). Additionally, the rapid pace of technological advancement has outstripped the rate at which non-technical users can acquire the necessary skills, further exacerbating the divide (Von Krogh, 2018). Stephanidis (2022) has highlighted the critical need for a solid R&D agenda for universal access to Information Society Technologies, an objective that has started to feature systematically in the research agendas of institutions and national funding agencies. Shneiderman (2000) further argues that achieving broad user reach is not just a democratic ideal but also a strategic business decision. He underscores the importance of universal usability in computing services, which, given their complexity and the diverse applications requiring high interactivity, is essential.

In light of this context, the case of Windows 95 emerges as a prime example of how usability can be a decisive factor in the mass adoption of technology. The Windows 95 project's commitment to iterative design, usability testing, and problem tracking significantly reduced barriers to personal computing, making it more accessible to a broader audience (Sullivan, 1996). This approach not only enhanced user satisfaction but also set a precedent for future technologies to emulate. Building on this legacy, AI, particularly through advancements in Natural Language Processing (NLP), is set to continue this trend by bridging the gap between human language and machine understanding, offering a more intuitive and seamless interface for human-computer interaction (Shivahare et al., 2022; Adam M Sanadi and Venkatesh Bhat, 2022). Natural Language Processing (NLP) is a critical discipline within artificial intelligence that bridges computational techniques with human language, enabling machines to interpret, generate, and respond to human text and speech (Hirschberg & Manning, 2015). This field integrates concepts from computer science and computational linguistics, providing the foundation for a range of applications from machine translation and sentiment analysis to chatbots and virtual assistants (Young et al., 2018) Banane and Erraissi (2022) define NLP as the intersection of computer science and linguistics, broadening its applications to include functions like automatic translation, sentiment analysis, and chatbots, thus further democratizing access to technology. Moreover, the integration of NLP with another emerging technology, big data, marks a significant development. Banane and Erraissi (2022) observed also that big data has transformed NLP researchers into data scientists, capable of choosing the right data representations. The Casablanca Artificial Intelligence Observatory noted the impact of Big Data on NLP, particularly in providing access to the semantic content of textual data and combining the two technologies to process massive NLP data. In conclusion, the democratization of technology, facilitated by AI and NLP, is a crucial step towards making technology accessible and user-friendly, thereby enabling companies and individuals to remain competitive and updated in the job market. This integration could be a significant stride towards achieving technological democratization, especially with the advent of Web 3.0 and digital technologies. Finally, other technologies such as Blockchain technology could follow in these footsteps, as user-friendly interfaces are anticipated to facilitate its mainstream adoption, as forecasted by Tapscott and Tapscott (2016), reinforcing the importance of usability for technological uptake.

Purpose of the paper. The central aim of this paper is to examine the dynamic interplay between emerging technologies and their integration into Society 5.0, emphasizing the pivotal role of Human Computer Interaction (HCI) and Artificial Intelligence (AI) in bridging the gap between technological innovation and user accessibility. This research seeks to contribute to the ongoing discourse on technological democratization, exploring how advancements in machine learning, natural language processing (NLP), and big data can significantly enhance the usability and user experience, thus fostering broader technology acceptance and adoption. This paper sets out to explore two main research streams: the concept of technology as a Universal Design (UD) and the implications of the digital divide. By examining the evolution of HCI theories and practices alongside the burgeoning field of AI, this work aims to underscore the necessity of developing toolkits that make complex technologies more accessible to the general populace. Moreover, it endeavors to identify the limitations of current technological implementations in real-world scenarios, thereby informing future design and development efforts.

Additionally, the work will explore the transformative potential of NLP in making technology more intuitive and aligned with human language, thus contributing to the democratization of technology. Ultimately, the analysis of NLP as a transforming technology from the lens of HCI and Universal Access aspires to advance the understanding of how emerging technologies can be harnessed to foster a more inclusive and sustainable future, in line with the principles of Society 5.0.

Methodology. *This study will adopt a cross-sectional, descriptive research design using a quantitative methodology. The primary objective is to quantify and analyze the perceptions, experiences, and expectations of a young demographic regarding current and future user interfaces, with a special focus on the impact of Natural Language Processing (NLP) and Artificial Intelligence (AI) technologies. This approach enables the researchers to capture a snapshot of the evolving user-interface landscape through the lens of the next generation of users.*

In collaboration with a leading AI consultancy firm, the authors developed a structured questionnaire designed to capture a broad spectrum of experiences and expectations related to navigation interfaces. The questionnaire encompassed various dimensions such as:

- **Ease of Use:** *Questions designed to assess how intuitively users can navigate and utilize interfaces without prior training or instruction.*
- **Intuitive Design:** *Items focused on evaluating the naturalness and simplicity of the interface design, facilitating a seamless interaction.*
- **Personalization Capabilities:** *Queries to understand the importance and effectiveness of interface personalization in enhancing the user experience.*
- **Role of NLP and AI:** *Questions aimed at gauging the perceived benefits and potential of NLP and AI technologies in making interfaces more responsive, interactive, and human-like.*

Sampling and Data Collection

The study targeted a sample of 200 young individuals aged between 13 and 18 years, identified through purposive sampling to ensure a focus on the next-generation users who are at the forefront of adopting and interacting with new technology. This age group is particularly relevant given their native digital fluency and potential to shape future technology trends. The questionnaire was administered online, leveraging digital platforms popular among the target demographic to ensure a high response rate and engagement.

Data Analysis Approach

Upon collecting the responses, the data will be subjected to rigorous statistical analysis. The initial step will involve descriptive statistics to summarize the data, followed by inferential analyses to examine relationships and differences within the data. Specifically, the study will employ:

- **Factor Analysis:** *To identify underlying variables (factors) that explain the pattern of correlations within the observed variables, particularly relating to usability and interface design preferences.*
- **Regression Analysis:** *To explore the predictive relationships between demographic variables (e.g., age, tech-savviness) and key outcomes related to expectations for future interfaces and the perceived role of AI and NLP.*
- **ANOVA (Analysis of Variance):** *To compare the responses across different groups within the sample, if applicable, to identify any statistically significant differences in perceptions and expectations.*

Ethical Considerations

Given the involvement of minors, the study adhered to stringent ethical guidelines, including obtaining informed consent from parents or guardians and ensuring the anonymity and confidentiality of respondents.

The methodology outlined provides a robust framework for exploring the intricate dynamics between young users and digital interface technologies. By analyzing the nuanced feedback from this demographic, the study aims to contribute valuable insights into designing future interfaces that are not only technologically advanced but also deeply aligned with user expectations and preferences.

Results. *The anticipated outcomes of this research project suggest a transformative shift in the realm of online navigation experiences, especially among the younger generation, whose digital behaviors are poised to redefine the norms of interaction with digital technologies. This shift is largely driven by the sophisticated integration of Artificial Intelligence (AI) into the fabric of user interface design, marking a departure from traditional, linear search methodologies towards a dynamic, conversational interaction paradigm. Specifically, in this emerging paradigm, the act of searching online is expected to evolve from a perceived ‘loss’ of time—often associated with the mechanical act of querying and sifting through results—to being considered a meaningful ‘investment’ of time. This reevaluation is rooted in the premise that searches, through AI-enhanced conversational interfaces, offer not just answers but also a pathway to discovery and learning. The initial search intent thereby unfolds into a broader educational journey, where the acquisition of knowledge is complemented by an exploratory and interactive engagement with information. Central to this paradigm shift is the role of AI-driven chat interfaces that simulate a natural, human-like conversation with users. These interfaces are designed to comprehend queries in a nuanced manner, engage users in a dialogic interaction, and provide responses that are not only accurate but also contextually relevant. This level of interaction facilitates a more intuitive and engaging information-seeking process, where queries lead to conversations, and conversations pave the way for personalized learning experiences. Moreover, AI’s capability to offer personalized recommendations and guide users through tailored learning journeys represents a significant leap forward in enhancing user satisfaction and engagement. By analyzing user preferences, past interactions, and search behaviors, AI systems can curate content that resonates with*

individual users, thus making the search process more aligned with personal interests and learning goals. This bespoke approach democratizes access to information by catering to users with diverse digital literacies, ensuring that the technology is inclusive and accessible to all. Indeed, the expected results underscore a critical move towards democratizing access to information, where the ease and enjoyment of the search process are emphasized across user demographics. By breaking down barriers to digital literacy and making the search experience more accessible and pleasurable, this new paradigm has the potential to level the playing field, enabling users from varied backgrounds to explore, learn, and grow in the digital age.

Research limitations. The core limitation of this study stems from its concentrated examination of a young demographic, specifically individuals aged between 13 and 18 years. While this group represents a critical segment of the digital user base, known for its adaptability and engagement with emerging technologies, it does not encapsulate the full spectrum of experiences, behaviors, and expectations prevalent across the broader population. The unique digital literacy levels, cognitive development stages, and social contexts of this age group may influence their interactions with and perceptions of AI-driven conversational interfaces in ways that are not entirely representative of other demographic segments. Consequently, the findings of this study, while valuable, offer a perspective that could be limited in its applicability to the wider population, potentially overlooking the varied needs, limitations, and opportunities that other age groups face in relation to technology adoption and interface design.

Managerial implications. The advent of AI-driven conversational interfaces marks a pivotal shift in the digital landscape, presenting both challenges and opportunities for organizations across various industries. This evolution underscores the need for a strategic reassessment of user interface design, where the focus transitions from traditional, static models to dynamic, interactive, and personalized experiences. Managers and decision-makers are tasked with recognizing the potential of AI to revolutionize customer interactions, streamline operations, and enhance the overall user experience. This requires a proactive approach to integrating AI technologies, ensuring that they align with organizational goals and user expectations. Organizations are encouraged to make substantial investments in AI technologies, recognizing their potential to offer significant competitive advantages. This involves not only financial investments in acquiring AI tools and platforms but also investing in the development of in-house AI capabilities. Building a robust AI infrastructure necessitates training and hiring skilled personnel, including data scientists, AI specialists, and UX designers who can harness the power of AI to create innovative user interfaces. Such investments also extend to ongoing research and development activities, ensuring that AI applications remain cutting-edge and responsive to evolving user needs. Moreover, in the era of AI-driven conversational interfaces, organizations must strive to create digital experiences that are intuitive, accessible, and engaging. This involves designing interfaces that can understand and anticipate user needs, provide personalized responses, and facilitate a seamless interaction. Ensuring accessibility is also critical, as digital solutions must cater to a diverse user base, including individuals with varying levels of digital literacy and those with disabilities. By focusing on these aspects, organizations can enhance the effectiveness of their digital interfaces, fostering positive user experiences that drive engagement, satisfaction, and loyalty.

Originality of the paper. This paper carves a unique niche within the academic and practical discourse on the intersection of Artificial Intelligence (AI) and user interface design. It extends beyond the conventional analysis of AI's technical capabilities to explore its transformative potential in making technology more democratic and accessible. By focusing on the nuanced ways AI can enhance user interface design to engage next-generation users effectively, this study offers fresh insights into creating digital environments that are not only technologically advanced but also universally accessible and inclusive. This dual emphasis on innovation and accessibility distinguishes the paper within the broader realm of technology management and human-computer interaction research. Moreover, while numerous studies have explored the technical aspects of AI and its applications in various domains, there remains a dearth of comprehensive analysis on how AI-driven advancements in user interface design can democratize access to technology. By elucidating the ways in which AI can make digital tools more intuitive, personalized, and engaging, this paper illuminates a path forward for leveraging technology to bridge digital divides. It underscores the importance of a user-centered approach in the evolution of digital interfaces, advocating for the development of systems that cater to a wide spectrum of user needs and abilities.

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General management

Blockchain Waste Management: A Systematic Literature Review for the Public Administration

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Abstract

This research contributes to the studies on public service innovation and the New Public Governance theory. The results are based on a systematic literature review that was carried out to characterize and critically evaluate the published literature on blockchain waste management until 2024. A keyword search was first performed by using IEEE Xplore, Google Scholar, Science Direct, Scopus, and Web of Science. After removing the papers that were not closely related to the topic, 120 articles were retained for an in-depth review. The research highlights how blockchain technology applications in waste management have the potential to change the current organizational patterns and support the public service processes in assuring cleanliness and healthy environments for communities. Among multiple new digital technologies, the characteristics of blockchain have made it promising to transform many activities related to public service provision, such as waste management. Public Administrations are found to benefit from the application of blockchain technology through improvements in processes efficacy and traceability, while regulatory uncertainty and questions around scalability represent major costs and risks for them. This systematic literature review makes several contributions. Firstly, providing insights for interpreting some emerging applications of blockchain in the field of waste management and clarifying the research paths in the context of blockchain, digitalised waste management, and circular economy. Secondly, identifying the main research topics and research methods, it enables researchers to identify which areas are yet to be explored and shows those that have already been discussed by extent in the literature. The need for more in-depth research has emerged to have a full understanding of the situations in which blockchain technology is beneficial.

Keywords: waste management; blockchain; systematic literature review

Framing of the research. *Today's resource production and waste generation is causing unprecedented environmental degradation, climate change, and pollution. Among the public services that are impacting sustainable development, waste management plays a fundamental role (Rakesh et al., 2021). The importance of waste management in sustainable development is stated by the UN's Sustainable Development Goals, goal 11, i.e., "Sustainable Cities and Communities" in target 11.6 aims at reducing the adverse per-capita environmental impact of cities paying attention to municipal and other waste management by 2030 (The Global Goals). The World Bank describes waste management as the collection of solid waste from the point of generation to the point of treatment or disposal. Yet a more comprehensive definition of waste management in line with the sustainable development challenge states that waste management is the ability to deal with waste generated and eliminate its destructive effects on the environment, economy, and human health (Ishtiaq et al., 2018). There are two major concerns regarding waste management systems: one related to public sector reform legislation, and the other to sustainability in the urban context (Mendes et al., 2012). Municipal solid waste management is an area where improvements are needed since most household wastes comprise biodegradable components, which, when buried, contribute to soil, surface, and groundwater pollution and greenhouse gas emissions (Vambol et al., 2023).*

The Public Administration (PA) has the responsibility of making strategic decisions that affect the daily health, productivity, and cleanliness of communities due to global consumption patterns and waste management (Kaza et al., World Bank Group, 2018). The New Public Governance (NPG) seems to be the conceptual tool that best reflects the reality of the working lives of public managers. The NPG states that public service delivery requires the governance of sophisticated public service systems where innovation plays an important role (Osborne S. P., 2010). In fact, innovation is seen as a means through which to achieve service efficiency and effectiveness and the base for the structuring of a sustainable business model of PSOs (Brown, Osborne, 2015). Through an innovation-oriented approach, smarter and

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more sustainable cities are growing where the public administration (PA) agenda considers sustainability as a key success factor (Gnan et al., 2013, Homsy and Warner, 2015, Deslatte et al., 2017, Rodrigues et al., 2018). The alignment between municipal waste management policies and strategies and its operations is fundamental to build a strategic vision based on sustainable development that guides performance results (Sukholthaman et al., 2017; Wilson et al., 2015; Mendes et al., 2012; Rodrigues et al., 2018). Sustainability involves three systems: environmental, economic, and political/social systems. The challenge of governance, and thus of PA, is to sustain each system on its own while maintaining an appropriate balance among them (Fiorino, 2020). The PA has to deal with the expense of urban waste management and the limited resources, the capacity of planning, contract management, and operational monitoring. Waste management operations must contend funding with other priorities for communities such as clean water, education, and healthcare when nearly 4 percent of the budgets in high-income countries are already dedicated to waste management – the budget rises to 20 percent in low-income countries. Only with accurate data, it is possible to design systems with the right number of vehicles, establish efficient routes, set targets, and track progress (Kaza et al., 2018; World Bank Group, 2018). Studies show how blockchain technology offers new means to assure transparency, prevent fraud and establish trust in the public sector (Rizal et al., 2018). Blockchain technology is a peer-to-peer distributed network that contains the complete record of transactional ledgers in an immutable and transparent manner (Chen et al., 2018; Shaik et al., 2021). It is defined as “a technology for sustainability transformation of the linear economic paradigm”: it can favor the adoption of circular practices thanks to a double integration that identifies those responsible for the entire lifecycle of waste flows, with a reduction in management costs and control time (Centobelli et al., 2021; Krajnakova et al., 2019; Centobelli et al., 2021; Bockel et al., 2021). Blockchain technology and the circular economy are the two emerging concepts that will revolutionize lives in the upcoming decades as blockchain provides transparent information and reliability to the circular economy system (Khadke et al., 2021). However, blockchain adoption and use in the context of waste management is only partially explored in academic research.

Purpose of the paper. This article aims to explore the current research topics and challenges regarding blockchain adoption in waste management and share future directions for PAs. The research might serve as an overview of the current state-of-art of blockchain technology solutions leading to the obtainment of the United Nations Sustainable Development Goals (SDGs).

To pursue this aim, the following research questions have been formulated:

RQ1: What are the main characteristics of literature regarding blockchain in waste management?

RQ2: What are the main applications of blockchain in waste management analysed by current literature?

RQ3: What are the challenges that the PA may face in introducing blockchain technology in waste management?

Methodology. The authors have chosen to use a systematic literature review which enables the identification of the main literature gaps and the future research fields that could still be developed (Tranfield et al., 2003). NVivo12 facilitated the organization and extraction of information required for a systematic literature review. The process included the creation of a database of the records, their codification, and analysis. NVivo is a software package built to analyze qualitative and non-structured data. Different classifications have been created to organize the data extraction process. Firstly, each record was catalogued regarding its general characteristics, including title, author, year, type of publication, method, journal, and policy sector addressed. Next, a coding scheme has been created including criteria such as the focus of the papers, the geographic area of the authors, and the research method used (Tab. 1).

Tab. 1 Categorization criteria

<i>A: Research Focus</i>	<i>B: Geographic Area</i>
A1. Solid waste management	B1. Europe
A2. E-waste management	B2. North America
A3. Water waste management	B3. South and Central America
A4. Plastic waste management	B4. Asia
A5. Other	B5. Oceania
	B6. Africa
	B7. Mixed
<i>C: Research Methods</i>	
C1. Qualitative method	
C2. Quantitative method	
C3. Case study	
C4. Design Science Research	
C5. Literature review	
C6. Other	

Results.

RQ1: What are the main characteristics of literature regarding blockchain in waste management?

Although the authors did not choose a specific time frame while creating the article database, the presence of articles focusing on blockchain in waste management is found mainly from 2018 onwards. The number of papers and the year of publications show how the topic is still relatively new in literature, which indicates that several research gaps are yet to

be addressed to fully comprehend the impact of blockchain technology on waste management and consequentially the PA organization and strategies. The papers analysed in the review process result being written mostly by authors from the Asian geographical area. As for the research methodologies, the DSR method has been most applied.

During the review process, solid waste management resulted as the most frequently identified research topic which is fundamental to address the governance process of municipalities: it is a key administrative unit for managing urban waste and delivering an eco-friendly environment to the citizens residing in urban areas (Akram et al., 2021).

The main applications of blockchain in waste management analysed in literature are identified in data sharing and management reward-based systems, fraud prevention, and real-time waste collection (Ratnasabapathy et al., 2019; Pellegrini et al., 2020; Taylor et al., 2020; Akram et al., 2021).

RQ2: What are the main applications of blockchain in waste management analysed by current literature?

Blockchain technology is identified as the solution for fraud prevention incentivizing individuals to correct disposal of waste, but also for data sharing and management, to digitalize documentation of activities such as waste generation, waste collection, and recycling (Salmon et al., 2021; Akram et al., 2021). Blockchain technology is also applied to implement the digitalized documentation of activities such as waste generation, waste collection, and recycling (Akram et al., 2021). The presence of an electronic database and the electronic sharing of information relating to waste makes it easier to record all data relating to the life cycle of materials and products, improving the related control activities, and increasing collaboration among them (Pellegrini et al., 2020). Due to the traceability of data written and shared on blockchains, recyclers can keep track of the waste generated as it moves through the various chains. Consumers can also use the public ledger information to make more informed product purchasing decisions (Khadke et al., 2021). Furthermore, blockchain data cannot be edited, it is therefore important to have robust protocols for recording transactions, such as automating the process using complementary technologies or requiring digital signatures from all parties involved in a transaction (Taylor et al. 2020).

Reward-based systems motivate individuals in the correct disposal of waste (Zhang 2022; França et al., 2021, Akram et al., 2021; Sen Gupta et al., 2021). An organization employing smart waste management and a reward-based system can allow the recycling of waste and promote sustainability. From a government perspective, monetary government services and products can be allowed to be paid off using the tokens, thus increasing market demand for the tokens, which in turn motivates users for waste segregation (Sen Gupta et al., 2021).

A possible application of Ethereum's Blockchain digital architecture has been implemented in a small municipality in the State of Sao Paulo, Brazil (França et al., 2021). Crypto-coins and security support are applied through Ethereum's Blockchain to replace a paper-based system where low-income households get the so-called Green Coins in exchange for their selected solid waste which is used by local registered traders. The aim was to incentivize citizens to a correct solid waste collection process through the possibility of buying assets with the Green Coins and for the Municipality to sell solid waste to recycling companies. The use of social cryptocurrencies supported by blockchain innovates the standards of negotiation between collectors and local commerce, as well as the reliability and trustworthiness of the monetary transactions bringing benefits to public administrations. The interest for a social-currency system is growing and the benefit is identified in a different view of the collection and disposal of waste which may be viewed as economically worthwhile (Zhang, 2022).

Furthermore, automatic reward systems for the disposal of waste in smart bins have been proposed (Akram et al., 2021). Smart bins are bins where a sensor node can communicate data to a cloud server via a gateway. Interoperability is the key to making the system work. IoT and a blockchain network are linked for a real-time implementation where the IoT devices of the bins monitor data in real-time and the weight of the bins creates new transactions in the blockchain network.

Lastly, real-time collection of waste from bins once they are full and real-time disposal of waste from vehicle to disposal area if the vehicle container is full are of research interest. Real-time decision-making is a priority in a smart and sustainable city (Gupta et al., 2019; Gupta et al., 2021).

RQ3: What are the challenges that the PA may face in introducing blockchain technology in waste management?

Blockchain waste management represents an advantage for the PA yet, the assumption that all entities may cooperate and agree to be part of a common blockchain system may be a limit to its fruitful application. Furthermore, a significant challenge for blockchain systems is implementing governance and determining a process for maintenance and upgrades (Scott et al., 2021). Among the possible challenges that the PA might find in the attempt to implement blockchain technology to waste management in their organizational and strategic processes the lack of education and training of those actively using the applications and the lack of regulations are two of the most frequently identified (Ongena et al., 2018; Pucihar et al., 2018; Zhang et al., 2022; Torkayesh et al., 2021; Khadke et al., 2021). Nonetheless, blockchain data cannot be edited, incorrect additions cannot easily be fixed, and the ownership of data must be clearly defined from the beginning. The data entered on the blockchain must be correct. The type of responsibility and whether it transfers with ownership may be set out in laws and policies, but gray areas exist (Taylor et al., 2020). Yet 20% of the barriers to the application of blockchains are due to technical reasons, another 80% are due to current business processes, modes, and management systems (Mori 2016; Song et al., 2022). Therefore, the main challenge in applying blockchain to waste management is the current business processes and the lack of institutional innovation or, even more importantly, the presence of Internet around waste facilities to transform the required data (Song et al., 2022). Yet there is a need for

more empirical research. A continuity of research should involve testing systems in real operating environments, and developing the studies based on Science Design Research (França et al., 2021).

Research limitations. The main limitations of this review are determined by the very infancy of the literature on blockchain in public services. One of the shortcomings of the literature is the scarce number of empirical analyses on blockchain in waste management. Secondly, even though the search and screening process has been carried out in detail including multiple datasets, there is a possibility that some high-quality work has been left out. Finally, this article does not cover the technical and computational aspects of blockchain technology. Further research is needed to understand what the necessary steps for the PA are holistically considering the processes needed to implement blockchain waste management.

Managerial implications. The results of this systematic literature review show how blockchain technology has the potential to facilitate sustainable managerial processes for PAs. Nonetheless, blockchain technology can facilitate the incorporation of good governance characteristics: participation, transparency, responsiveness, effectiveness and efficiency, and accountability (Steenmans et al., 2021). Blockchain can completely change the way people manage environmental resources and help promote sustainable development (Herweijer et al., 2018). Blockchain is also a tool to incentivize individuals to follow the correct process in the disposal of waste through certified reward systems using tokens and social cryptocurrencies. Overall, the implementation of smart contracts and IoT brings government agencies and stakeholders on the same blockchain platform improving monitoring and transparency in the waste management processes (Kassou et al., 2021). All the aforementioned are blockchain applications that have the potential of impacting positively both the organizational and managerial flow of activities and the sustainable development of cities and communities. Blockchain can favor the adoption of circular practices thanks to a double integration that identifies those responsible for the entire lifecycle of waste flows, with a reduction in management costs and control time (Centobelli et al., 2021; Krajnakova et al., 2019).

Originality of the paper. Integrated with various digital technologies, blockchain holds the potential to address the limitations of traditional waste management systems and introduce novel business models beneficial to both society and the environment (Lamichhane, 2017). This paper stands out from previous reviews by offering an updated examination of recent literature and a fresh analytical perspective to study the advancement and implementation of blockchain technology. Its primary contributions lie in providing a valuable resource for waste management researchers, industry professionals, and policymakers through the consolidation of knowledge and practices in this field, updating the overview with recent findings, and presenting future research directions alongside discussions on challenges and opportunities. The paper also delves into summarizing and analyzing pertinent challenges and opportunities concerning the application of blockchain in waste management.

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Blockchain Waste Management: are Italian managers ready?

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Abstract

This study contributes to the investigation of blockchain technology applications for waste management. The research is focused on the sustainability of small municipalities through new digital tools since, according to the United Nations Sustainability Goals, the local communities are considered the starting point for sustainability practices. For this purpose, the Italian case is studied as one of the top countries in terms of the number of small municipalities which represent about 60% of the total. The TAM2 model has been applied to qualify the acceptance of blockchain technology among managers of the Public Utilities and private enterprises responsible for waste management in small municipalities in Italy. The results show how the offering of services based on blockchain technology is still partially unknown. There is a need for training not only for the managers to develop the necessary skills to benefit from the blockchain platforms but most importantly for the overall knowledge of the characteristics and the possibilities of new value creation in waste management services. The article contributes to theoretical studies on blockchain for public services and aims at offering a new background for the formulation of national policies for the management of this technology. Nonetheless, it offers a managerial contribution by analyzing data relating to the management of blockchain technology in the waste management sector.

Key words: Waste Management; Blockchain; TAM2; Italy

Framing of the research. Waste management is a critical element of bioeconomy, allowing the natural environment to be kept clean, combined with the use of recycled materials, thus bringing economic benefits (Vambol et al., 2023).

The Italian waste management policies have been developed based on the European Union's policy framework (European Green Deal - Directive 2008/98/EC). The sustainable waste management processes are based on the measures of the National Waste Management Programme (PNGR) and the National Recovery and Resilience Programme (PNRR). The PNGR is the policy framework designed to guide public policies and incentivize private initiatives promoting sustainable and circular economy practices that can benefit society, economy, and the environment. It is one of the core elements of the Italian National Strategy for the Circular Economy. Similarly, the PNRR has included among its missions the improvement of waste management as a fundamental tool for the implementation of the circular economy, by strengthening separate waste collection infrastructures, modernising and developing new waste treatment plants, and bridging the gap between regions to achieve the recycling targets set by European legislation. The local authorities are responsible for waste collection and disposal. These activities are performed in-house or outsourced to paid waste management contractors and/or licensed private waste management companies. Article 182-bis of Legislative Decree No 152/2006 promotes the municipalities with self-sufficiency in the disposal of non-hazardous urban waste and their treatment waste through the creation of an integrated plant network in the optimal territorial area. The heterogeneity of solid waste composition and different collection and management regimes make the circular economy process in waste management difficult.

The main pain point in the waste streams' analysis is their movement to extra-regional destinations which makes it particularly complicated to follow their path from production to destination. Article 7 of Legislative Decree 36/2003, transposing Directive 99/31/EC and subsequent amendments, provides that the waste may only be landfilled after treatment and in line with these provisions. Mechanical biological treatment is commonly employed as a preliminary step before landfilling or incineration, aiming to enhance the waste's biological stability by reducing moisture and volume. Municipal waste sent to intermediate forms of mechanical biological treatment before a destination of recovery or disposal formed the 30.1% of the municipal waste produced in 2022.

In many cases, mechanical biological treatment plants are located on the same site as landfills or incinerators, as part of a treatment platform. Moreover, both the mechanical biological treatment plant and the treatment plant for the

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organic fraction of the separated waste collection are frequently located on the same site. According to ISPRA (2023) the landfill waste disposal must be halved in the next 15 years (-10% by 2035) the percentage of waste to be sent to material recovery operations will have to be significantly increased to ensure the 60% recycling by 2030 and 65% by 2035.

However, examining the data within a specific region alone can often lead to misinterpretation. This is because waste generated by mechanical biological treatment plants, categorized under Chapter 19 of the European waste list, is often either incinerated, sent to landfills, or processed in facilities located outside of the region. The Italian region Molise is an example where a significant portion (60,6%) of incinerated CSS originates from other regions.

The main difficulties in waste management are related to the impossibility of safely and transparently tracing the path from collection to disposal of waste (Gopalkrishnan et al., 2019). The PNRR program envisages the establishment of a nationwide monitoring system to address issues of illegal landfills and facilitate the achievement of sustainable development goals.

In today's digital era the development of new technologies such as blockchain, artificial intelligence (AI), Internet of Things (IoT) or Cloud Computing is impacting sustainable development practices (Ibáñez-Forés et al., 2014; Jasiulewicz-Kaczmarek & Gola, 2019). Among the aforementioned, blockchain technology has received increasing attention from academia and practitioners due to the numerous benefits for sustainability such as cost optimization, transparency, data verifiability, and facilitation of collaboration between organizations (Sarkis et al., 2012; Morkunas et al., 2019; Figueiredo et al., 2022; Park and Li, 2021; Pizzi et al., 2022; Rejeb and Rejeb, 2020; Pizzi et al., 2022b). The adoption of such technology improves the performances in various areas contributing to sustainable development practices monitoring the processes and facilitating their reporting (Saberli et al., 2019). The presence of a digital database and the sharing of information in a transparent, verifiable, and secure manner is favorable for waste management by putting circular economy principles into practice through the traceability of the entire life cycle of materials and products (Pellegrini et al., 2020; Akram et al., 2021; Baralla et al., 2023; França et al., 2020; Gopalakrishnan et al., 2021; Steenmans et al., 2021; Taylor et al., 2020). Furthermore, systems based on rewards through complementary currencies are used to promote good waste disposal practices sustainably (Zhang, 2018; França et al., 2021; Ahram et al., 2021; Gupta et al., 2021).

Blockchain technology is seen as a means of circular economy by tracking waste until it is reused in new markets (Taylor et al. 2020). Due to the presence of a digital database and the sharing of waste information, blockchain is the tool for recording material and product lifecycle data, improving control activities and coordination capabilities (Pellegrini et al., 2020). In other cases, reward-based systems motivate users to proper waste disposal by promoting sustainable practices (Zhang 2022; França et al., 2021; Akram et al., 2021; Gupta et al., 2021). The use case presented by França et al. (2021) is a relevant example of the possible use of blockchain technology in solid waste management. The article presents the project for the application of Ethereum's blockchain digital architecture in a small municipality in the state of São Paulo, Brazil. The case proposes the introduction of complementary currencies using the Ethereum blockchain in a small municipality in the State of São Paulo. The proper disposal of solid waste by users is rewarded through so-called 'Green Coins' that can later be used to purchase products at participating local shops. The aim is to incentivise citizens for proper solid waste collection through the possibility of purchasing goods with "Green Coins" and for the municipality to sell solid waste to companies responsible for its recycling. Another incentive use case is presented by Akram et al. (2021) with an automatic reward system for individuals for disposing of waste in smart bins. Smart bins are containers in which a sensor node transmits data to a cloud server via a gateway: interoperability is the key to making such a system work. The IoT and a blockchain network are connected for a real-time implementation in which the IoT devices in the containers monitor the data in real-time and the weight of the containers creates new transactions in the blockchain network. Full bins are emptied, and disposal occurs in real-time at the moment the vehicle is full (Paturi et al., 2021; Gupta et al., 2021).

Considering the several benefits that blockchain technology brings in responding to the needs stated by the European and Italian policies, there is still a lack of studies regarding the following research question: "What are the main factors influencing the perceived ease of use of blockchain technology in waste management in Italy?"

Purpose of the paper. The following research aims to investigate the factors influencing the perceived usefulness of blockchain technology when applied to waste management in small Italian municipalities. In fact, the 2030 Agenda with its Goal 11 "Sustainable cities and human settlements" focuses on the development of urban areas yet suggests that the individual local communities are the first areas to tackle to achieve global sustainability goals. In particular, the Italian case is analyzed as it is one of the largest European countries in terms of the number of municipalities, where approximately 5.498 of them are small municipalities (Istat, March 2022).

Methodology. In order to detect perceptions regarding blockchain technology in waste management in small Italian municipalities, the TAM2 model has been applied. TAM2 is one of the models that best captures the degree of acceptance of the use of this technology (Taherdoost, 2022).

The first step of the study identified the variables that could determine the adoption or rejection of the technology, taking as reference the variables proposed by Davis and Venkatesh (2000): perceived usefulness (PU) and perceived ease of use (PEOU), subjective norms (SN), voluntariness (V), image (IM), work relevance (JR), output quality (OQ), demonstrability of the result (RD), with the addition of transparency (TR), a variable representative of the blockchain attribute. In the second phase, the sample under examination was identified.

Out of a total of 5,535 small municipalities in Italy, the size of the significant sample was found to be 360. Subsequently, a two-tiered stratification was used: in the first included the municipalities belonging to inland areas; secondly the research considered a fundamental requirement underlying the potential of blockchain application: the

access to a broadband network structure (Kaushik et al., 2021). Once the stratification was completed, the municipalities under study were chosen through a simple random selection. Subsequently, the waste management companies of the municipalities selected for the survey were identified. The search was carried out through the institutional website of the municipalities, the website *trasparenzatori.it* (directly connected to the ARERA database), and through a telephone contact. The final number of companies receiving the questionnaire was 173.

Data was collected through a questionnaire via the EuSurvey platform. The questionnaire contained an introductory description of Blockchain technology to assure that all the respondents had the basic knowledge of the proposed topic. For each of the statements relating to the identified characteristics, the respondent was asked to rate them according to a 4-level Likert scale from “Strongly disagree” to “Strongly agree”. The collected data has been analysed through a linear regression based on the following hypotheses:

H1: Perceived ease of use positively and directly influences perceived usefulness in the adoption of blockchain technology.

H2: Subjective norms positively and directly influence perceived usefulness in the adoption of blockchain technology.

H3: Voluntariness positively and directly influences perceived usefulness in the adoption of blockchain technology.

H4: Image positively and directly influences perceived usefulness in the adoption of blockchain technology.

H5: Work relevance positively and directly influences perceived usefulness in the adoption of blockchain technology.

H6: the quality of the output positively and directly influences the perceived usefulness in the adoption of Blockchain technology.

H7: The demonstrability of the outcome positively and directly influences the perceived usefulness in the adoption of blockchain technology.

H8: Transparency positively and directly influences the perceived usefulness in the adoption of Blockchain technology.

Results. The results of this preliminary study contribute to the existing literature by shedding light on the perceived usefulness of blockchain technology in waste management processes by managers. The selected sample is representative of small municipalities and municipalities in inland areas in Italy: those are small communities that through the means of digital technologies can assure sustainable development guaranteeing the well-being of its inhabitants and the overall society. The implementation of blockchain technology in these areas is challenging since, according to a preliminary analysis, there is a low level of digital literacy that places Italy in fourth-last place at the European level. This finding is confirmed in the analysis carried out where blockchain is not recognized as an easily usable technology that can add value to one's work, in the eyes of the respondents. This view is further reinforced by the idea that blockchain technology does not bring additional value to one's work in the waste management sector. There is a need to raise awareness of the potential of blockchain technology among staff members and managers through digital training sessions.

Additionally, the ease of access to a broadband network is perceived as a factor that positively influences the propensity to consider integrating blockchain technology into existing business processes, due to the possibility of more easily creating an ecosystem in contact with all actors in the value chain.

Lastly, the analysis of the attribute of voluntariness shows that the choice to adopt blockchain technology is already influenced by the willingness to innovate processes and stay abreast of today's digital age. In essence, the choice to adopt this technology does not seem to be a top-down decision but rather is dictated by the willingness of companies to adapt to the broader context of sustainable development through new digital technologies.

Research limitations. The main research limitation is due to the small number of respondents, a larger number of data might give further and more accountable information about the blockchain technology acceptance in waste management in the small Italian villages. The preliminary results of this research will be further investigated to expand the collection and analysis of data on the Italian territory. Future studies may apply different data collection methodologies through interviews and focus groups to deepen the analysis. Furthermore, the analysis may be extended geographically by detecting differences in the approach to blockchain technology in different areas.

Managerial implications. The relevance of blockchain technology in the waste management sector is supported by several studies which number is constantly growing. This analysis offers the necessary information to managers who need the tools to implement blockchain technology to guide them towards the necessary steps needed to benefit from the increased positive perception of blockchain and its application to better comply with the new European and national policies.

Originality of the paper. This paper offers a new perspective on blockchain technology acceptance starting from the small Italian municipalities that need to preserve their cultural and natural heritage in compliance with the norms on waste management.

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Creating a Blockchain Governance framework for Circular Economy: Preliminary results

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Abstract

Circular Economy principles applied to delivering more sustainable services have the potential to improve efficiency and have a positive impact on the well-being of citizens, their collective and individual behavior and on the overall sustainability of society. Although several research studies are focusing on the positive impact of blockchain technology on circular economy practices, there is a gap in the knowledge on the enabling blockchain governance frameworks. The governance of a blockchain project is crucial for its sustainability as it enables stakeholders to discuss and make decisions on how the blockchain should evolve sustainably. The research aims at contributing to the definition of the main features of a blockchain governance framework for circular economy through a cross-analysis of the existing literature regarding blockchain governance frameworks and blockchain circular economy application requirements. The blockchain governance framework for circular economy is demonstrated by the application of a case study. The research results might have a meaningful impact on the operating environment of the public sector which has undergone a fundamental shift towards a more competitive nature with an increasing need for innovative service offerings.

Key words: *blockchain; blockchain governance; circular economy; public service*

Framing of the research. *CE is a new business model that shifts from the conventional “make, use, dispose” approach and aims to reduce waste, maximise resource efficiency and realise harmony between the economy, environment, and society (Rejeb and Appolloni, 2022). CE principles applied to delivering innovatively more sustainable public services such as municipal waste management, public transport, public urban spaces, and heritage buildings have the potential to improve efficiency and have a positive impact on citizens, their collective and individual behavior, their well-being, and on the overall sustainability of society (Klein et al., 2020). Yet, the transition toward a CE is a challenging task that requires the involvement of multiple sectors and stakeholders to tackle several issues regarding increased risk, lack of clear responsibility and accountability (Salmenpera et al., 2021).*

Digital technologies, including blockchain technology, are considered essential tools for CE implementation (Piscicelli, 2023; Basile et al., 2023; Siddharth et al., 2019). Blockchain technology may be defined as an online open-source distributed ledger where transactions between different stakeholders can be recorded and updated simultaneously and in real-time (Iansiti and Lakhani, 2017). As a virtue, blockchain has the potential to create cleaner economic transactional processes and help achieve a balance between the environment, economy, and society (Upadhyay et al., 2021b).

The fields of application for blockchain technology are potentially countless (Swan, 2015). Since the introduction of Bitcoin by Nakamoto (2008), its underlying technology (i.e., blockchain) has evolved: environmental, social, economic, individual, and technological sustainability are some of the goals in which blockchain plays a fundamental role depending on the choice of the most energy-efficient consensus algorithm (Hughes et al., 2019; Schinckus et al., 2020).

However, while the benefits of blockchain technology look promising, the adoption and deployment of blockchain in industries are still facing many technical and non-technical challenges (Al-Jaroodi and Mohamed, 2019). Specifically, the governance of a blockchain project is crucial for its sustainability as it enables stakeholders to discuss and make decisions on how the blockchain should evolve (Filippi and Loveluck, 2016; Garagol and Nilsson, 2018).

In business management literature, blockchain governance (BG) is conceptualized as the process by which individuals and groups with ongoing relationships bargain on how to adapt to changes within the institutional environment (Allen and Berg, 2017; Gruin, 2021). On the other hand, some describe BG as the “placement and enactment of decision rights” (Ziolkowski et al., 2020). For the purpose of this study, we consider BG as “the structures and processes that are designed

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to ensure the development and use of blockchain” (Liu et al., 2023). While the structures are defined by the decentralization level, processes mean the coordination between stakeholders throughout the development lifecycles of different governance objects which must be compliant with legal regulations and ethical responsibilities.

The decentralization nature of blockchain differentiates its governance from existing governance frameworks: the main difference sits in the difficulty in describing the allocation of responsibility, capability, and authority (Liu et al., 2023; Werner and Zarnekow, 2020). This study answers to the need for a suitable blockchain technology governance framework investigating the main characteristics suitable for CE practices.

Purpose of the paper. Identified the lack of research on blockchain governance for CE, and the lack of tools and artifacts to be used to understand blockchain governance for CE. This research aims to improve the lack of understanding and tools available on the topic of blockchain governance by designing a conceptual framework that captures the dimension and layers of blockchain governance for CE in order to guide business, regulators, users, and other relevant stakeholders to analyze the governance of blockchains in a structured way. The research results might also have a meaningful impact on the operating environment of the public service delivery which has undergone a fundamental shift towards a more competitive nature with an increasing need for innovative and sustainable service offerings.

Methodology. To understand how blockchain technology can be beneficial for CE we attempted a categorization of blockchain governance structures identifying the ones suitable for this objective. The following research question has been formulated: “what are the characteristics of blockchain governance structures in CE?”.

A cross-analysis of the existing literature regarding blockchain governance frameworks and blockchain circular economy application requirements has been carried out. The conceptualization of a BG framework for CE is based on the analysis of the existing literature. The method used for this research is based on a systematic literature review (Tranfield, 2003). A systematic review is an effective exploratory methodology for early-stage research on blockchain (Frizzo-Barker et al., 2020). Systematic reviews are a form of meta-analysis designed to collect, investigate, and summarize what is known and what is not known about a “specific practice-related question” (Francis-Smythe et al., 2013; Frizzo-Barker et al., 2020). They bridge the “research-practice gap” (Rousseau, 2006) which is the aim of this study. Title, abstract, and keywords were used to search published journal papers and conference proceedings on three electronic database resources: IEEE, Scopus, and Web of Science. The cross-analysis is based on results regarding blockchain governance and blockchain technology for circular economy. We then identified a case study and analysed the BG characteristics through secondary data following the Yin (1994) case study framework. According to Yin (1994), single cases may be used to confirm or challenge a theory, or to represent a unique or extreme case. Case studies tend to focus on one or two issues that are fundamental to understanding the system being examined (Yin, 1994). In this research the case study protocol is based on documentation, archival records, and participant observation.

Results. The characteristics of blockchain for the CE concern the need to track the environmental and social circumstances that might cause health, environmental, and safety issues. The reduction of poor synchronization and enhancement of information interaction and trust among participants to the supply chain and improvement of social accountability by supporting coordination between different distributed databases (Zhang et al., 2022; Upadhyay et al. 2021c). Blockchain is also expected to control emission reduction, energy and resource efficiency, and waste reduction respecting the legal compliance (Mendoza et al., 2019; Nunes et al., 2018). The Circularise case study does align with the requirements for blockchain in CE identified in the literature. The Circularise case study describes a circular economy business project. The information collected from the official website and other secondary data such as online interviews with the Business Development and Strategy manager, online articles and the Circularise official website. The information is presented with a descriptive structure. Circularise is a software platform that provides end-to-end traceability and secure data exchange for industrial supply chain through Digital Product Passports. According to Phil Brown, Circularise VP Business Developer and Strategist, “Companies need to provide information on their supply chain and on the percentage of recycled products and the supply chain actors are able to share sensitive data without risking privacy and confidentiality”. Companies with a private wallet can access the Ethereum network through an interface and a mobile application. “Circularise system enables manufacturers, suppliers and recyclers in the value chain to share data in a secure way, get an oversight of the whereabouts of products and raw materials, get certifications, and to plan logistics and recycling activities for specific materials. Ultimately, Circularise communication system brings us closer to a more sustainable economic model, the circular economy, one product at a time.” (CES 2019).

Circularise provides a structure and a dataset. The customer receives the aggregation of data validated by a third party. The data is only available to selected participants to the network. The blockchain network adopted by Circularise is Ethereum. In the Ethereum network, the standards are introduced as Ethereum Improvement proposals (EIPs) which community members discuss through a standard process and the system adapts to the changing environment by forks and changes in the consensus mechanism. Ethereum uses a proof-of-stake-based consensus mechanism that derives its crypto-economic security from a set of rewards and penalties applied to capital locked by stakers. This incentive structure encourages individual stakers to operate honest validators, punishes those who don't, and creates an extremely high cost to attack the network. The miners are rewarded in Ether. In a PoS-based configuration, there is no competition between miners since the protocol implements a random selection in which the probability to be selected is related to the number of cryptocurrencies the miners put at stake. In doing so, PoS system avoids the computational competition between miners since only the selected miner validates the transaction and gets the reward. By operating in that way, the PoS protocol also ensures a low level of electricity consumption while guarantees that mining activities can still be done at an individual level (Schinckus, 2020; Vranken, 2017).

The Ecosystem support program allocates the resources to builder tools and infrastructure. Ethereum aims to achieve equilibrium by adapting a democratic governance model, influence from the benevolent dictator, and a possibility for forks. It comprehends open access rights since joining industry organization groups requires an application process and license fee. The Ethereum Foundation manages some community infrastructure, employs team working on Ethereum software such as testing frameworks, and runs official developer conferences. First, as for the level of decentralization, the application of a public blockchain leaves space for a democratic approach of the stakeholders sharing information across the whole value chain. The Ethereum network guarantees a transparent decision process through a PoS validation protocol which is known for being the best solution to respect sustainability requirements. Furthermore, at an ecosystem-level Ethereum Ecosystem Support Program allocates the resources to builder tools, and infrastructure. Ethereum aims to achieve equilibrium by adapting a democratic governance model, influence from the benevolent dictator, and a possibility for forks assuring accountability and legal compliance. The preliminary results of the study show how in order to assure CE, the blockchain is also bonded to legal compliance, hence why the permissioned public blockchain with a medium level of decentralization suits the purpose. Furthermore, the level of blockchain decentralization improves social accountability by supporting coordination between different distributed databases (Upadhyay et al., 2021). Blockchains can also enhance sustainability practices such as recycling performance by motivating consumers to recycle through rewards in the form of cryptocurrency tokens (Oropallo et al., 2021). Through a transparent decision process, organizations could reduce the transaction hierarchy and overcome the uncertainty of key information, including the quantity, quality, and type of recycled products (Chen et al., 2021). Blockchain technology reduces transaction costs in a circular model by improving performance and communication among the stakeholders and assuring accountability of the single participants.

Research limitations. *This paper represents a preliminary result of a broader study of BG in CE.*

Managerial implications. *The role of public services has been fundamental as regards the creation of modern states and societies since they contribute to territorial consolidation, social cohesion, and political stability. The introduction of CE and innovation such as blockchain is a complex process that presents diverse technological, socioeconomic, legal, and cultural opportunities and barriers. Where businesses and individual end-users should take into account the aspect of governance in their choice for a particular blockchain application or platform, it is also a requisite for regulators and developers to apprehend. In this paper, we analysed the six main characteristics of BG in CE following the framework of six BG principles formulated by Liu et al. (2023). We elucidated how governance is studied in blockchain applications to CE. BG is an ongoing research topic, and there is a need to further develop the study of guidelines and design of its structure to guarantee sustainability and a circular economy. This research contributes to system engineering literature by providing a unique view of blockchain governance for circular economy. Researchers and actors of the blockchain systems are provided with a foundation and shared language to understand and communicate blockchain governance decisions. Moreover, one expert noted that blockchain governance is not going away anytime soon: it is especially important when “something goes wrong”.*

Originality of the paper. *To the best of the authors’ knowledge, no studies are attempting to design a unique governance framework to assure CE practices through blockchain technology.*

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Social acceptance of Decentralized Renewable Energies in East African rural communities: preliminary evidence from a multiple case study

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Abstract

Africa is facing a severe energy crisis, with over 660 million people lacking access to electricity. Renewable energy (RE), including the decentralized ones, offers a promising solution to achieve universal energy access and promote sustainable development. However, the success of this energy transition depends also on the social acceptance of RE projects by local communities. This research study focuses on analysing the social acceptance of geothermal off-grid power plants in four East African regions: Homa Bay County (Kenya), Era Boru (Ethiopia), Lac Abbè (Djibouti), and Bugarama Valley (Rwanda). The communities involved in this study exhibit diverse livelihood conditions and primary economic activities. The study employs a multiple case study approach, combining the Social Representation Theory with a qualitative analysis of data collected through focus group discussions and interviews with community members and key stakeholders. Preliminary findings show that communities display varying degrees of openness and participation towards the geothermal project, and concerns include potential changes in the use of existing geothermal resources and understanding of the new technology. Community ownership, benefit sharing, and understanding of the technology emerge as key factors for social acceptance. Repeated interaction with researchers and understanding of the communities' precarious living conditions appear to influence their level of acceptance towards RE. Encouragingly, knowledge sharing and peer-to-peer communication within similar communities seem to improve acceptance. This study contributes to a deeper understanding of Social Representation Theory and the dynamics influencing the social acceptance of RE projects in Africa, providing valuable insights for the design and implementation of future initiatives. Managerially, underestimating social acceptance and its cultural underpinnings, especially in culturally distinct regions, can be critical. Further managerial implications will arise from ongoing data analysis. Our analysis faced limitations. Inviting diverse participants to focus groups proved challenging due to cultural factors, like gender roles in some communities. Additionally, historical political dynamics may influence RE acceptance. Time constraints prevented revisiting all sites. We recommend future longitudinal studies on social acceptance and communication's impact on socio-cultural factors.

Key words: *energy access; social acceptance; decentralized renewable energy; social representation theory; Africa; rural communities.*

Framing of the research. *Africa is facing a serious energy supply crisis, leaving more than 660 million people without access (IEA, 2022b), just 570 million in Sub Saharan Africa (Liu, Y., & Bah, Z. (2021). The increasing energy demand in the region, fuelled by population growth forecasts, is a major obstacle to sustainable economic development (Adenle, 2020). Improving energy access in Sub-Saharan Africa has the potential to improve, among the others, healthcare, life expectancy, education, recreation, economic opportunities, and gender equality (Opuku et al., 2021; Musango et al., 2020). The lack of infrastructure and poverty are the main reasons for energy access issues in Africa (IEA, 2022c). Energy poverty remains a pressing challenge, also limiting clean cooking technologies (IEA, 2022). Moreover, energy poverty, in a vicious circle, resulting from poverty and perpetuating poverty, hinders development, and disproportionately impacts rural communities (UN, 2021). Fortunately, Africa boasts vast renewable energy-RE potential, offering a promising path towards a brighter future (Bugaje, 2006). Especially in rural areas of Sub-Saharan Africa, RE is considered as a channel to development and livelihood transformation (Liu & Bah, 2021). According to the IEA's NZE scenario, by 2030, more than half of the population will gain access to full electricity through decentralized solutions like mini-grid and stand-*

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alone systems, with 90% of them using renewable energy sources (IEA, 2022). Decentralized Renewable Energies-DREs present a compelling alternative to grid extension in SSA, simultaneously driving energy access and fostering socio-economic development (Mandelli et al., 2016), especially for rural areas and communities.

DREs, as other power plants, need stakeholder support for their implementation (Enserink et al, 2022). Indeed, stakeholders can influence a project by playing a supporting and/or hindering role. At the same time, stakeholders are influenced by the outcome of REs (Ruggiero et al., 2014). Among the different type of stakeholder support, DREs need acceptance; acceptance is a challenge developing countries too (Hosseini et al., 2018). When dealing with development of RE, social acceptance is insufficiently covered by issues of technology design (Dewin-Right et al., 2017). Social acceptance can be measured also ex-ante, with collecting stakeholders' perception and ensuring a match with expectations (Prosperi et al., 2019). Within social acceptance, the community acceptance dimension refers to the specific acceptance of siting decisions and RE projects by local stakeholders, particularly residents and local authorities (Wüstenhagen et al., 2007). Moreover, communities are central actors in current low-carbon energy transitions (Küpers & Batel, 2023). Low-carbon transition is even important in Sub-Saharan Africa, where rural communities suffering from lack of clean energy access can benefit in terms of social development (Casati et al., 2023). Social - and community - acceptance can bring success for developing community-based projects, particularly when implemented with a bottom-up approach (Velasco-Herrejon and Bauwens, 2020). Acceptance of RE can be favoured by community engagement (Jami and Walsh, 2017). Community engagement can help in developing trust and dialogue for the mutual benefit of all involved (Ryder et al. 2022). In Africa, lack of community engagement has been demonstrated as a possible barrier to the DRE project's durability (Akinyele et al., 2018), such as the practice of using only outsiders to plan and execute local community projects could be a recipe for the failure of the systems (Nuru et al., 2022). Community engagement and social acceptance can be favoured - and studied by scholars - through participatory processes, as previous research has successfully demonstrated (i.e.: Alvial-Palavicino et al., 2011; Dewin-Right et al., 2017; Geekiyange et al., 2020; Jami and Walsh, 2017; Liu & Bah, 2021;).

Purpose of the paper. Theory-building research on the social-cultural dimension of acceptance of RE is in its infancy (Jami and Walsh, 2017). Research has shown that different theoretical approaches may only capture limited aspects of how society - and communities - perceives energy technologies (Batel, 2018). They may overlook the contributions of various stakeholders, their expectations and engagements, and the varying manifestations of technologies on different levels (Dewin-Right et al., 2017). Our analysis starts from the community acceptance dimension proposed in the framework by Wüstenhagen et al. (2007), theorizing a holistic approach to social acceptance. The paper by Wüstenhagen et al. (2007) is a ground-breaking in the field of research, not only establishing it as a distinct area of study, but also organizing previous research and outlined a direction for future research on the social acceptance of RE, urging a focus on the relationship between opposition to RE and various socio-political, market, and community factors, rather than relying solely on the NIMBY explanation (Batel, 2020). Moreover, Dewin-Right et al. (2017) call for understanding which socio-cultural aspects shape the public acceptance of RE. In addition, Batel (2020) wishes to further develop, at an empirical level, the research on dynamics of people's responses to RE at local level. Dewin-Right et al. (2017) suggest this must be done through examining the communication, both coming from third parties and among the members of the communities, within focus group discussions with members of communities engaging with or affected by RE. We have answered to these calls for research through the lens of the Social representation theory (Moscovici, 2001; Wagner, 2011). Social representations theory examines the evolution of social knowledge, focusing on the psychological and social processes that shape how individuals and communities interpret and adapt to new ideas or technologies like RE adoption. This theory suggests that understanding these changes occurs at both the individual and societal levels, with communication playing a key role in knowledge construction. Social representation theory helped us in analysing and understanding various socio-cultural aspects that can favour social acceptance, including resistances, ability to understand new technology, effects of local beliefs and behaviours (including religious and cultural one), etc. Power dynamics among actors also influence how information is shared and understood (Dewin-Right et al., 2017). Hence, we have also looked for differences in the ability to accept the technology depend on the nature of the stakeholders. Our Research Questions are: "How do socio-cultural aspects shape the community public acceptance of RE? How do local community dynamics affect people response?"

Methodology. Our research employs a multiple case study approach (Stake, 2013; Yin, 2015), with different sites for each case study. We took part of a participatory process for a feasibility study on the design of an off-grid geothermal plant, catering to both direct and indirect uses, across four geographically distinct regions in four different countries in East Africa. The regions/counties/districts involved were Homa Bay County in Kenya, Era Boru in Ethiopia's Afar Region, Lac Abbè in Djibouti, and Bugarama valley in Rwanda. These communities exhibit diverse livelihood conditions and primary economic activities. Homa Bay County in Kenya is community of both farmers and fishers, living in an old volcano site. Geothermal energy is present and is used mainly for religious and healing reasons, as well as recreational. The same similar conditions are present in the Bugarama site in Rwanda, with the difference that the communities live mainly from subsistence agriculture and the cultivation of rice and fruit trees. Era Boru and Lac Abbè are morphologically and geographically distinct, as well as culturally. The two sites are united by the presence of the same community, the Afar. The Afar are separated by the border between Ethiopia and Djibouti but share the same cultural customs. The Afar live mainly by pastoralism and are a semi-nomadic community. The sites of Era Boru and Lac Abbè are in the hottest places on Earth, and the population has developed ways of living that depend on the direct use of geothermal energy as a source of water. Each site presents differences inside. For instance, within Homa Hills, three locations directly participate in geothermal direct utilization, while two locations are neighbouring. While belonging to

the same linguistic and cultural groups (Luo people), the communities showcase distinct social characteristics. In Homa Hills, for instance, some communities are solely focused on agriculture, whereas others primarily engage in fishing on Lake Victoria.

Willing to study socio-cultural aspects that can favour social acceptance through the lens of Social Representation Theory, we adopted a qualitative grounded theory approach (Chun Tie et al., 2019). Data collection was done priorly with desk research aiming at understanding the communities' features. Then, we conducted at each site, and within various sub-locations, primary data collection.

Data collection methods included focus group discussions (FGDs) and semi-structured interviews with key stakeholders and community members with an interest in the project. These stakeholders encompassed citizens, public authorities, and representatives from non-governmental organizations (NGOs). Each FGD lasted approximately three hours, while interviews averaged one and a half hours. FGD participants were chosen through a random selection process within the community, ensuring representation of various social categories (e.g., occupation, gender, age, community role, religious leaders, etc.). During the FGDs, a research team of three to four individuals with diverse backgrounds (e.g., economist, anthropologist, sociologist, geologist) was present, accompanied by a simultaneous interpreter and translator. To facilitate comprehensive discussions and capture nuanced perspectives, participants were encouraged to express their opinions in their native language (DhoLuo in Kenya, Kinyarwanda in Rwanda, Afar in Ethiopia and Djibouti). We conducted seven FGDs in Kenya, two each in Rwanda, Ethiopia and Djibouti. Interviews span from a minimum of four to a maximum of fifteen for each site. Primary data collection was done between November 2022 and November 2023. Moreover, we visited one of the sites twice, a year later. This second stage enabled a deeper exploration of socio-cultural aspects and communication, both coming from third parties, considering the presence of external actors. All FGDs and interviews were audio-recorded and transcribed by a native mother tongue for each of the languages, resulting in a significant and paramount volume of transcribed data. Data analysis and coding were performed using a combination of manual techniques and dedicated software (i.e., NVivo) by a team of two researchers working collaboratively.

Results. The analysis of the results is always ongoing, so only preliminary evidence will be presented below. The communities immediately appeared different both in their willingness to participate in the participatory process and in their acceptance of the geothermal plant. Although they were given many opportunities to design the system and be involved in the subsequent phases, some populations immediately showed a bit of reluctance towards the intervention. Others showed concerns regarding the possibility that this plant could change the use that was already being made of the geothermal resource. Some populations, however, have shown interest and openness to possible substantial changes in use, as long as benefits were achieved. Some other populations have demonstrated ability to understand new technology, others less so. In both categories, some were willing to participate in various ways. Surely, communities' members knowledge of RE is very different within the community, depending often on the role inside the community and on the background of individuals. For instance, sometimes, have a certain public role (i.e, public officials) can bring members to be more open-minded. This, at the same time, may be caused to the public role effect on expressing opinion in public.

A theme that emerged is the possible ownership of the power plant by the community, as long as there is sharing of information first. Nevertheless, ownership is not to be understood in the strict sense. Finally, the site that was visited two times gave interesting results on the effects on community acceptance due to multiple interactions, which were also methodologically different from each other. Another research result, which seemed evident to us, depends on the starting condition of the populations. These populations often live in conditions of accentuated poverty. This can make them accept RE at any cost. Finally, we observed how during the discussions, the community knowledge of RE was influenced both from the intervention of third parties (i.e, experts) and from the discussion within the community, with social processes shaping how individuals and communities interpret and adapt to new ideas on geothermal energy. These results confirm what Social representation theory states, with changes in knowledge construction occurring with the key role of communication.

Research limitations. Although the data collection was very comprehensive, our article is not without limitations. First of all, when we got into the cases, we realized that, although we had tried to invite more actors to participate in the FGDs, this did not happen, also for cultural reasons. For example, some communities, by religion, expect men to make decisions. So, even if women were present in the FGDs, they often did not speak up or seemed embarrassed to counter men's theories. Another limitation, however, depends on how the ethnic group has experienced some national political dynamics in recent decades. This could affect the willingness to accept the RE regardless of their goodness. Finally, it would have been interesting to return to all the sites twice, but this was made impossible due to time and resource constraints. We suggest further research on longitudinal study on social acceptance and the effect of communication on socio-cultural factors.

Managerial implications. The first managerial implication of this article is that the issue of social acceptance for DREs in Sub Saharan Africa should not be underestimated. Above all, the socio-cultural factors behind social acceptance must not be underestimated, especially in areas where the populations have very marked cultural characteristics. What seemed positive to us, however, is the impact of knowledge on social acceptance and of two-way communication made by peers, as when members of similar communities from the same nation were invited into the community. Other managerial implications will emerge as the data analysis continues.

Originality of the paper. *To the best of our knowledge, the field of social acceptance of DREs in Sub Saharan Africa, looked through the lens of Social Representation theory, is quite new in the management literature. Moreover, RE are still underdeveloped in Africa and new projects could take inspiration from the methodology and managerial implications of our article.*

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Sustainable Management of the Photovoltaic Waste Stream: Regional Analysis and Economic and Management Perspectives

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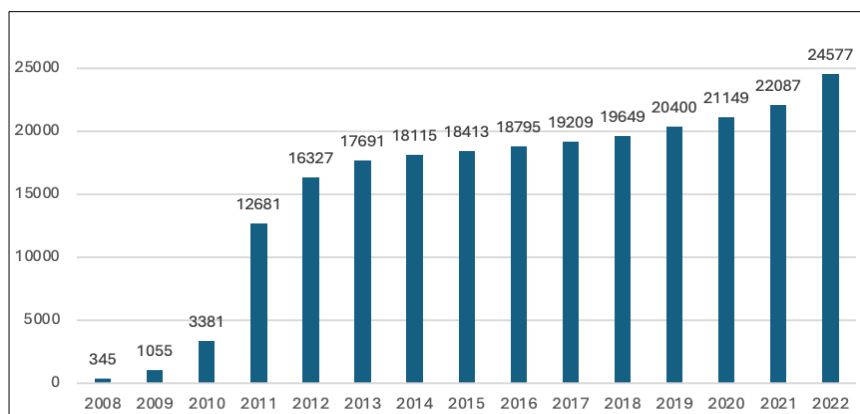
Abstract

Photovoltaic panel utilisation has grown significantly in Italy and globally during the past two decades. This technology's primary benefit is that it converts sunlight into power without emitting greenhouse gases throughout its operation. The lifespan of solar modules is typically restricted to approximately 25 to 30 years. Hence, it is logical to anticipate a further rise in the generation of associated waste in the upcoming years. We suggest a regional approach to estimate the amount of waste that will require disposal, considering the various types of panels now employed in Italy. This method will allow efficient planning of waste management for solar panels. Furthermore, it will encourage the advancement of innovative recycling and material treatment methods, reducing the environmental footprint and guaranteeing sustainable waste management in the future. The methodology will be applied focusing on the installation of solar panels using different technologies (thin film, monocrystalline silicon, and polycrystalline silicon) in Italian regions from 2000 to 2022. A preliminary economic assessment of the materials that can be recovered from photovoltaic panels will be provided.

Key words: circular economy; EoL PV modules; forecasting; PV waste management; sustainability.

Framing of the research. Since the 2000s, there has been a significant global spread of photovoltaic energy as a source of electricity in various regions. This technology is adaptable, widely produced, and has affordable installation costs, making it highly popular among individuals and companies. The global installed capacity increased from 224.215 MW in 2015 to 1.055.030 MW in 2022, marking a growth of almost 350% in a span of 7 years (Source: IRENA, 2023). The total installed capacity in Italy has significantly expanded since 2008 and continues to grow rapidly, as shown in Figure 1.

Fig. 1: Cumulative PV power installed in Italy (MW)



Source: GSE reports (2008-2022)

The installed capacity in Italy increased by 20.6% during the year 2022, rising from 22.594 MW to 25.094 MW (GSE Report, 2008-2022). Photovoltaic panels are the third most important renewable energy source in terms of installed capacity, following hydropower and wind (IRENA, 2023). Furthermore, solar energy is anticipated to emerge as one of

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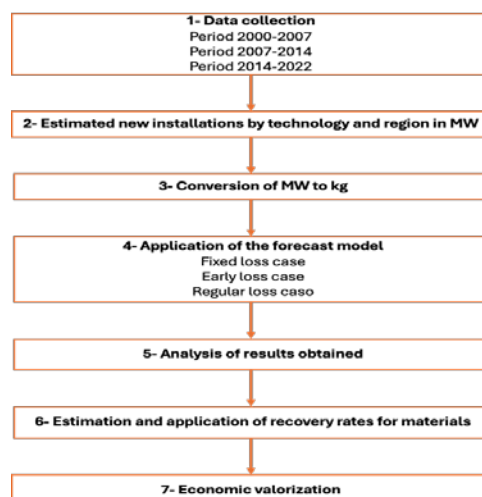
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the most prominent forms of renewable energy in the years to come (Romel et al., 2024; Xu et al., 2018). As a result of these installations, there will be a substantial increase in the quantity of waste that is produced by photovoltaic panels in the coming years. Furthermore, despite the ongoing attempts to create new technologies related to renewable energy sources, there is still a void in the literature concerning relevant solutions for the management of photovoltaic modules when they have reached the end of their life cycle (Mahmoudi et al., 2019; Malandrino et al., 2017). Many studies have made an attempt to forecast the waste stream that will be generated by photovoltaic panels in the European and non-European Countries (Czajkowski et al., 2022; Sharma et al., 2023; Tan et al., 2024). used the Weibull function to make the prediction of the waste load in Australia till the year 2059. The life cycle of photovoltaic cells was also taken into consideration. It was necessary to estimate the degree to which photovoltaic technology has penetrated the market in Australia. The authors also recommended the computation of the individual materials that comprise photovoltaic modules. Furthermore, by evaluating the rate of reuse of individual components, they forecasted savings from the recovery of these components for the creation of new modules. This was done from the perspective of a circular economy. Paiano (2015) suggests doing a study that is comparable to this one in Italy; however, the author assumes a fixed period of 25 years as the span of the lifecycle, and the forecast is carried out up until the year 2050. In addition, various photovoltaic panel technologies from the first and second generations are taken into consideration. Calculations were also made in this instance to determine the quantities of waste that were produced and then separated into the various components. Using the Weibull function and taking into account not only the photovoltaic module but also the Balance of System (BOS), which is the collection of all components that are necessary for the proper functioning of photovoltaic modules, Domínguez & Geyer (2017, 2019) carried out a calculation that was comparable in both Mexico and the United States. The authors of this study took into consideration a life cycle that is typically thirty years long. When applying the Weibull function and taking into consideration an average life of thirty years, Romel et al. (2024) made a prediction regarding the quantity of panels that will be available at the end of the life cycle by the year 2045. After then, the outcomes of this particular case were compared with the reports written by IRENA in order to determine how good the results were. Kim & Park (2018), in contrast to the research that were stated earlier, presented not only the waste prediction modelled by the Weibull function but also a defined usable life duration of 25 and 30 years in two different scenarios. As a result, it was possible to do more analyses using data that was comparable. In conclusion, Sharma et al. (2023) not only made a prediction for the quantity of photovoltaic panels that will reach the end of their useful life in India, but they also investigated the issues of reuse, recovery, and disposal, as well as the implementation of policies and strategies that encourage more sustainable waste management.

Purpose of the paper. The present study is still a work in progress. The aim of this research is to provide a regional method that is capable of addressing the developing difficulty connected to the management of waste resulting from the increasing use of photovoltaic panels. Due to the fact that photovoltaic modules have a limited lifespan, it is expected that there will be a significant increase in the amount of generated waste. As a result, the primary purpose of this research is to develop a method that is both efficient and accurate in determining the quantity and nature of waste that will be generated across the nation, as well as the locations where this waste will be generated. By developing the research for each region of Italy. The study serves as a helpful instrument for businesses operating within the sector to evaluate and plan for the management of solar waste in a sustainable manner. This strategy aims to minimize the environmental impact of photovoltaic waste production by estimating the recoverable amount. Additionally, it aims to promote the advancement of recycling and material treatment through research and development of innovative solutions. This will help to ensure that waste management is sustainable over the long term, with the ultimate goal of achieving a circular economy. In order to give data and practical tools that can be used to guide waste management decisions and policies in the solar energy industry, the approach that has been developed is specifically applied by taking into consideration solar panel installations in Italian regions and in various technologies from 2000 to 2022.

Methodology. The proposed methodology is divided into seven steps (Figure 2).

Fig. 2: Methodology to estimate photovoltaic waste



The first critical data are the total new installations for each year for each technology in each Italian region from 2000 to 2022 (measured in terms of installed power - MW). We consider three types of photovoltaic modules, which represent almost the entirety of the national market, and consist of monocrystalline silicon, polycrystalline silicon and thin film (GSE Report, 2008-2022). The source data (i.e. the new installations for each year broken down by technology and for each region) were obtained from the GSE (Gestore dei Servizi Energetici) reports and from a personal reworking of the data by the Terna database. Due to lack of obtainable data, assumptions were made:

1) 2000 - 2007: data are not available. It was necessary to consider new installations for each region as:

$$\text{New installations (t)} = \text{Total installations (t)} - \text{Total installations (t - 1)}$$

The only statistics available for this period are the total installations in Italy at the conclusion of period t. It was therefore necessary to consider the breakdowns of photovoltaic modules as zero over this short period. We took this assumption into account due to the limited number of photovoltaic modules in Italy till 2007. In addition, the percentage distribution of different photovoltaic module technologies within Italian regions was considered constant.

- 2) 2008 - 2014: data are not available. Data on new installations in Italy are available for each year. To obtain the data on new installations per region, the percentages of installations per technology in the different regions were considered constant, taking 2015 as the reference year.
 3) 2015 - 2022: data on new installations are available for each region and for each year.

As a result, in Figure 3 new installed capacity by Italian region for different years are reported, respectively 2012, 2017, 2022.

Fig. 3: New installed capacity by region (MW)



Source: Personal elaboration from data available on GSE Reports 2008-2022

By multiplying the total number of new installations by the percentage of technology used in each region, we obtained the necessary data. The data obtained in MW were converted into Kg of PV modules, obtaining the conversion factor from EPDItaly (Environmental Product Declaration), following the methodology proposed by IRENA (2016) and applied by Mahmoudi et al. (2019) and Paiano (2015). Prediction regarding the generated waste stream was conducted for different scenarios:

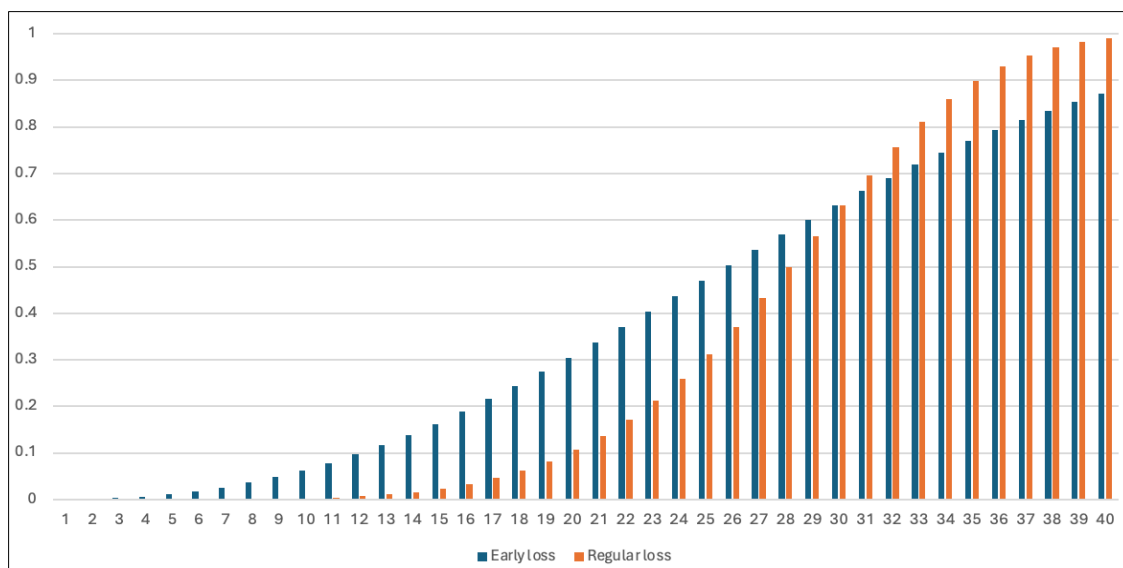
- Fixed loss: considering a useful life of 25 years (Paiano, 2015).
- Early loss e Regular Loss: both modelled using Weibull function.

The Weibull function is reported as follow:

$$F(t) = 1 - e^{-\left(\frac{t}{T}\right)^\alpha}$$

Where t represents the useful life of the photovoltaic module, T represents the considered average life of 25 years, and α is called the shape factor and is responsible for the shape of the Weibull curve. An α value of 2.4928 was considered for the Early-loss scenario, and a value of 5.3759 for the Regular-loss scenario. (IRENA, 2023; Mahmoudi et al., 2019; Sharma et al., 2023). In Figure 4 probability of loss based on Weibull function is reported.

Fig. 4: Probability of loss based on Weibull function



In Table 1 average lifetime of photovoltaic modules considered in other studies are reported, divided into different regions.

Tab. 1: Values of average lifetime of PV considered in other studies

Region	Global (IEA, 2016)	Mexico (Domínguez & Geyer, 2017)	Australia (Mahmoudi et al., 2019)	Italy (Paiano, 2015; this study)	Europe (Lugo-Laguna et al., 2021)	India (Sharma et al., 2023)
Average lifetime (year)	30	30	30	25	25	25

Data on the composition of the materials making up the photovoltaic modules and their recovery rates will allow us to proceed to the final stages of the study, namely the estimation of recoverable materials and the resulting savings (Domínguez & Geyer, 2017, 2019; Peeters et al., 2017).

Results. It is important to keep in mind that the current study is still considered to be a work in progress. One of the most important findings, is the precise calculation of the quantity of material that may be recycled or reused from photovoltaic cells that have been discarded. This was done within the framework of the circular economy. This computation method was carried out for each of the locations in Italy as well as for a variety of technologies, taking into consideration the time period spanning from the year 2000 to 2047. This particular time span was selected to be reflective of the typical lifecycle of photovoltaic panels, which is anticipated to be somewhere between 25 and 30 years. Taking into consideration the current historical backdrop, we designed an investigation to determine whether components from decommissioned solar panels could be categorised as dangerous or crucial (Lin et al., 2022). It is essential to take this step in order to acquire a comprehensive understanding of the environmental and socio-economic implications of solar waste management, particularly considering the rising issues that are associated with the availability of resources and the safety of materials (Lin et al., 2022). In addition to the quantification of the materials that are recyclable or reusable, a comprehensive economic analysis of these materials will also be carried out. The purpose is to determine the economic value of these materials and, from the point of view of a circular economy, the potential cost savings that the recovery of these materials might entail when it comes to the production of new photovoltaic modules. In addition to evaluating the viability of investing in recycling and reuse processes, this stage is vital for gaining a comprehensive understanding of the economic ramifications of adopting circular economy strategies in the photovoltaic panel industry. We will be able to provide an evaluation of the potential economic value of these materials. In the solar panel business, this gives a strong basis for making informed decisions and developing waste management plans, which in turn contributes to the promotion of responsible and sustainable resource management.

Research limitations. The presented research may encounter some limitations. Firstly, the collection of detailed data on the installation and distribution of solar panels may be hampered by the lack of comprehensive information, especially regarding the specific technologies used and accurate waste disposal predictions. As presented in the methodology section, some assumptions were made in order to obtain the necessary data for the completion of the study. This might compromise the replicability of the study for other states. In particular, both national and international databases were used, such as Terna, IEA (International Energy Agency), GSE (Gestore dei Servizi Energetici) and IRENA (International Renewable Energy Agency); despite this, the regional market breakdown per technology used was not always detailed and timely, and needed to be adapted. Another aspect to consider is related to the assumptions made about the

replacement of existing solar panels with new, more efficient technologies over time. Changes in replacement rates could affect waste generation projections. The complexity of photovoltaic waste management is a further challenge, especially if there is no adequate infrastructure for recycling and material treatment. Research may not fully address the practical realities and economic challenges of PV waste management. Environmental and social factors, such as impacts on human health and the environment due to exposure to chemicals during material recycling, would merit further investigation and a dedicated study. Finally, the research conclusions may be specific to the Italian context and may need to be adapted to be applied to other regional or national contexts.

Managerial implications. The exponential increase in the use of solar panels over the last 20 years has raised awareness of the importance of managing the technology's life cycle responsibly. When solar panels reach the end of their useful lives, it is essential for businesses and policymakers to make preparations for the management of waste not only during the manufacture and installation phases, but also after the panels have been installed. A strategic approach is required for this planning, which includes not only an accurate assessment of the amounts and types of waste that are generated, but also the creation of new solutions for the recycling and treatment of these wastes. In this context, businesses are being asked to make investments in the research and development of technologies for the recovery and treatment of photovoltaic materials, and they are being asked to achieve this in collaboration with other participants in the industry, governmental organisations, and research institutes. This partnership could be critical in developing sustainable solutions that can adapt to the rapid evolution of technology and environmental legislation.

This research is designed to provide utility for all parties involved. First and foremost, from the perspective of the businesses, it could be interesting to have a clear understanding of the economic return, that the photovoltaic recovery sector will have in the years to come. In this regard, the originality of the research, which consists of the determination of the amounts and regional position of the waste stream that is generated, is an helpful and all-encompassing instrument for the period of strategic business planning. On the other hand, the management implications of the circular economy in the photovoltaic panel industry necessitate a strategic and coordinated approach at the governmental level (Goe & Gaustad, 2014). In the past, policymakers in Italy have provided incentives for the manufacturing and installation of solar systems in order to encourage the growth of the photovoltaic industry so that it may serve both private and corporate consumers. In recent years, the growing utilisation of this technology has resulted in an immediate requirement to handle the issue of waste generated by photovoltaic cells at the end of their useful lives. To handle this new problem, policymakers must also encourage laws and regulations aimed at recovery and maximising the use of available resources (Goe & Gaustad, 2014). In addition to providing incentives for practices that involve the study and development of technology for recycling, recovery, and treatment of photovoltaic materials, these policies should also provide incentives for manufacturers to use recovered end-of-life materials as inputs (Lin et al., 2022; Zhang et al., 2023). Furthermore, policymakers should support the formation of partnerships between the public and commercial sectors, research institutes, and non-governmental organisations to create new and collaborative solutions for the intelligent management of photovoltaic panel waste. In order to achieve this objective, it is necessary to implement monitoring and control methods in the photovoltaic industry in order to guarantee compliance with environmental requirements and to ensure that waste is managed appropriately.

Originality of the paper. The originality of this paper lies in the innovative approach proposed to address a growing environmental challenge arising from the expanding use of photovoltaic panels. Although solar technology has provided substantial benefits in the production of clean energy, the research emphasises a frequently underestimated aspect: waste management at the end of the panels' life. As previously mentioned, various studies have been published in recent years to determine the quantity of waste generated by solar modules (Domínguez & Geyer, 2017, 2019; Mahmoudi et al., 2019; Paiano, 2015; Peeters et al., 2017; Santos & Alonso-García, 2018; Sharma et al., 2023). To the best of our knowledge, no one has ever penetrated into the regional context. Instead, our study presents a specialised regional technique for calculating and planning waste management from photovoltaic panels, taking into account the variety of technologies employed and the predicted increase in waste generation. This strategy is innovative because it takes a long-term view on solar waste management, anticipating and minimising potential negative environmental consequences. In particular, the study addresses businesses by providing a useful tool for planning investments to respond to a rising problem in our country, as well as the option to consider an economic return. On the other side, the study addresses policymakers in the same way, encouraging businesses and investors to approach a sensitive and timely problem. As a result, applying the proposed methodology to the specific Italian context makes an important contribution to the political and decision-making context, providing data and concrete tools to help decision makers make decisions about photovoltaic waste management and the promotion of effective environmental policies in the renewable energy sector.

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Enhancing Well-Being for People with Disabilities, Insights from Multiple Case Study of Smart Nature-Based Solutions' Actions in Italy

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Framing of the research. Disabled people are defined by The United Nations (2006, p. 4) as “those who have long-term physical, mental, intellectual, or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others.” This circumstance significantly complicates their capacity to enjoy public services and engage in routine tasks (Bhagal-Nair et al., 2023; Tuli et al., 2023). Indeed, there has been a longstanding emphasis on the crucial need to foster the safety of people with disabilities (PwDs) allowing them to actively engage in daily life activities to increase their overall quality of life (Blichfeldt and Nicolaisen, 2011; Darcy and Buhalis, 2010; Lyu, 2017; Rubio-Escuderos et al., 2021; Zhang and Cole, 2016).

Consequently, in this scenario, it becomes essential to advocate for the empowerment and autonomy of PwDs (Ali et al., 2024; Rubio-Escuderos et al., 2021; Buhalis and Darcy, 2011; Buhalis and Michopoulou, 2010). Despite the differences between various forms of disabilities that necessitate exclusive treatments (Kalargyrou et al., 2018; Liu et al., 2024), innovative results resulting from nature-based solutions (NbSs) emerged to promote the well-being of PwDs (Marchigiani et al., 2021). In fact, Domaradzka and colleagues (2022), stated that NbSs “should, directly and indirectly, affect public health and wellbeing by creating a healthier environment for citizens by supporting the prevention of a variety of health conditions, including somatic and mental.” As per this definition, NbSs entails strategies aimed at safeguarding, managing, and restoring natural or altered ecosystems. These strategies are designed to effectively tackle various societal challenges such as climate change, food and water security, and natural disasters, while simultaneously promoting human well-being and biodiversity benefits (IUCN French Committee, 2019; IUCN, 2012).

Furthermore, the European Commission provides a more expansive definition of NbSs, describing it as initiatives inspired and supported by, or mimicking nature with the goal of assisting societies in addressing a range of environmental, social, and economic challenges sustainably. Hence, NbSs have the potential to convert environmental and societal challenges into opportunities for innovation. The scientific interest on NbSs has primarily focused on mapping and collecting the multitude benefits arising from their application (Brink et al., 2016; Frantzeskaki, 2019) highlighting the synergies that NbSs have with technological advancements to optimize health-related services and cultivate a healthier urban environment for inhabitants (Domaradzka et al., 2022). This alignment underscores a pivotal paradigm shift, where the integration of technology enhances the efficacy and reach of NbSs interventions. Notably, the convergence of NbSs with progressive technology mirrors the evolving landscape of the 21st century, characterised by a pronounced attention on accessibility and inclusivity (Longo and Faraci, 2023). Substantially, by exploiting technological innovations, NbSs can effectively address global social challenges, particularly pertinent to the sizable demographic constituting approximately 15% of the world’s population (World Health Organization, 2021; Tuli et al., 2023).

Purpose of the paper. The integration of technology - which also focuses on generating accessibility and inclusion for PwDs (Longo and Faraci, 2023) - within NbSs can mitigate various barriers, facilitating their full and effective societal participation on an equal basis with others (Ali et al., 2023; Ginis et al., 2021). Specifically, technology can serve as a facilitator to alleviate several structural limitations and provide a better experience (Ali et al., 2023; Guner and Acarturk, 2020), ensuring equal opportunities among its beneficiaries (UN Department of Economic and Social Affairs, 2022). Despite numerous scientific studies addressing the application of technology for PwDs, there remains a scientific deficit regarding how NbSs, utilizing technology, can effectively generate accessibility and inclusion, thus transforming one of the major social challenges into opportunities for innovation (ICLEI, 2017; Kabisch et al., 2017; Mahmoud et al., 2021), with particular emphasis on local contexts. Indeed, as exposed in the study conducted by Frantzeskaki et al. (2019) to address the lacunae in the utilization of NbSs, it is essential to approach their implementation through an innovative lens. The authors delineate that integrating technology-driven solutions within NbSs can serve as a complement to their endeavors, a task which emerges as a predominant challenge within the NbSs (Farwig et al., 2017; Fernandes and Guiomar, 2018). For instance, leveraging technologies such as mobile phones or adopting citizen science

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methodologies facilitates the collection of data pertaining to the impact of NbSs on diverse sociodemographic segments (Frantzeskaki et al., 2019). In the light of NbSs and the technological approach to enhance readability, we will refer to the technologies involved in NbSs with the acronym S-NbSs, that means ‘smart nature-based solutions’. This leads directly to the research question of this work:

RQ1. How does technology acts as a facilitator within nature-based solutions to create accessibility and inclusion for people with disabilities?

Methodology. To investigate the research question and based on preliminary research regarding the accessibility and inclusion through NbSs, the researchers intend to gather data from four initiatives actively engaged in promoting NbSs and innovative technological tools in Italian cities (refer to table 1 for further sample details in which the Italian project of NbSs are termed adopting Greek alphabet to grantee their demand of privacy). Specifically, in alignment with the recommendations for future research outlined by Kabisch et al. (2017), which emphasize the necessity of employing multiple-case study research, and following the approach utilized by Frantzeskaki (2019), the present study will also adopt multiple-case approach. This approach is anticipated to facilitate the discovery of intriguing insights and emergent social and business phenomena (Yin, 2017). Given the context of exploratory research approaches as elucidated by Creswell and Creswell (2018), the number of interviews deemed appropriate for qualitative research. In particular, the authors favor a qualitative approach, utilizing a two-stage interview process employing thematic analysis techniques through semi-structured interviews to construct a realistic observation of the cases and extract new content (Braun and Clarke, 2012; Snow and Thomas, 1994) as the first stage. Additionally, a questionnaire will be developed based on a thorough literature review pertaining to the Integrated Model of Technology Acceptance (TAM 3) (Venkatesh and Bala, 2008) as the second stage. Furthermore, in some cases, more than one person will be interviewed and thus, for completeness of primary data, the authors will employ data triangulation. Indeed, researchers will seek the participation of NbSs project managers and professionals engaged in evaluating technology effectiveness within local green spaces in cities (Jack and Raturi, 2006). By adopting this strategy, the research aims to gather diverse perspectives and alleviate the constraints associated with relying solely on a single data source. The data collection methodology will encompass a secondary source such as project initiatives documented on the NbSs website, potential reports, press articles, and online videos sourced from respective initiatives. The incorporation of secondary data will guarantee the validity and reliability of the study (Creswell, 2014). Additionally, the integration of NVivo 14 software will be employed to meticulously organize and analyze the data, ensuring a thorough and systematic approach to data treatment.

After conducting the interviews, the qualitative methodology will be supplemented by the second stage via questionnaire. Specifically, participants will be asked about their willingness to take part in the questionnaire, which will be developed based on a literature review regarding TAM 3 (Venkatesh and Bala, 2008). As reported in the study by Lai (2017), Venkatesh and Bala (2008) fused Technology Acceptance Model version 2 (TAM 2) (Venkatesh and Davis, 2000) and the model of determinants of perceived ease of use (Venkatesh, 2000) to formulate TAM 3. It incorporates individual differences, system characteristics, social influence, and facilitating conditions as determinants of perceived usefulness and perceived ease of use. Within the TAM 3, experiences moderate the relationships between perceived ease of use and perceived usefulness, computer anxiety and perceived ease of use, and perceived ease of use and behavioral intention. All determinants of TAM 3 will be used for the construction of the questionnaire and the relevant items will be adapted (see table 2 in the appendix). By systematically collecting data on various efforts, the questionnaire will comprehensively map current practices and potential initiatives pursued through S-NbSs to promote actions aimed at enhancing accessibility and inclusion of PwDs.

Table 1. Analysis sample profile

ITALIAN PROJECT OF NBSS	ORIGN	REGION	COUNTRY
A	2011	Emilia Romagna	Italy
B	2020	Piedmont	Italy
Γ	2020	Piedmont	Italy
Δ	2023	Calabria	Italy
E	2023	Lazio	Italy

Results. In terms of results, we anticipate that S-NbSs will make a significant difference in improving accessibility and inclusion for PwDs. We hope to see this through real-life data that shows more participation from PwDs in different community supports thanks to S-NbSs. This would suggest that the obstacles that PwDs face are being reduced, leading to an overall better experience for them. Additionally, our research aims to uncover specific technological progress within S-NbSs that will be duplicated in different local communities. These could include personalised assistive devices, adaptable infrastructure, and/or digital tools designed to make local environments more accessible based on factors like the surroundings and local economic conditions. In conclusion, we plan to offer practical suggestions, such as guidelines for incorporating inclusive design principles into city planning, strategies for allocating resources to implement S-NbSs, and programs to educate and empower stakeholders involved in making these changes happen.

Research limitations. The research objective will be investigated in Italy, primarily due to the accessibility of data retrieval, as the researchers originate from this country. So, it is essential to recognize that the circumstantial analysis is

constrained by the geographical focus on Italy. This limitation underscores the need for cautious interpretation and generalization of the findings beyond the specific Italian context. Additionally, the study might face limitations in terms of the methodologies employed to investigate the role of technology within NbSs for promoting accessibility and inclusion for PwDs. For instance, the support of qualitative approaches such as multiple-case studies with interviews and questionnaire should offer pertinent insights but could scarcity quantitative data to establish statistical significance. Thus, quantitative approach should capture the nuanced experiences and perceptions of PwDs and stakeholders involved in S-NbSs initiatives. Finally, despite the consideration of all disabilities the effectiveness of S-NbSs initiatives in promoting overall accessibility and inclusion for all types of disabilities might be understated or oversimplified.

Originality of the paper. The findings hold promise for uncovering several originalities, which are anticipated to emerge as the research advancements, contributing to a deeper understanding of the subject substance and its effective application. Specifically, this paper will contribute to the existing literature on the utilization of NbSs by extending its application to encompass PwDs, without confining focus to a specific disability, thereby promoting its practical implementation. Secondly, through comprehensive scientific research, the authors will synthesize the current body of knowledge concerning the benefits of integrating NbSs, technology - S-NbSs -, and its eventual impact on PwDs, thereby fostering a deeper understanding of the subject. Moreover, by employing S-NbSs and thereby embracing an innovative methodology, we endeavor to enhance scientific understanding pertaining to the technology, recognizing that substantial progress remains important (Oral et al., 2020). Thirdly, the development of a theoretical model, derived from TAM_V3 with integrated considerations for disabilities, will provide a framework for further exploration. This success is anticipated to have potential applicability in other contexts and industries. Finally, employing a multiple-case study approach will enable the practical testing of the previously constructed theoretical model.

Managerial implications. From a practical perspective, the integration of technology - identified as a facilitator of everyday activities - will expand accessibility and inclusion to all individuals, thus accommodating a wider audience of people - like PwDs - and gaining a competitive advantage over those who do not prioritize it. Also, S-NbSs foster a more equitable and sustainable urban environment, thereby embodying a proactive approach towards addressing societal pressing needs and challenges. Secondly, it is crucial that such initiatives garner community support and political facilitation to engage local authorities and foster knowledge acquisition, acknowledgment, and investments essential for progress (Oral et al., 2020). Thirdly, this commitment will enhance the city's reputation, directly contributing to the local economy. Finally, through such commitment, local spaces will contribute to long-term sustainability and adapt to changing demographics by creating a comfy environment for PwDs.

Key words: Disabilities; People with Disabilities (PwDs); Nature based Solutions (NbSs); Technologies; Smart-Nature based Solutions (S-NbSs); Qualitative methodology; Integrated Model of Technology Acceptance (TAM 3).

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Appendix

Table 2. Determinants and items of TAM 3

DETERMINANTS	ITEMS	REFERENCE
Perceived Usefulness	Using the system improves my performance in my job.	VENKATESH V. and BALA H. (2008), “Technology acceptance model 3 and a research agenda on interventions”, <i>Decision Sciences</i> , vol. 39, n. 2, pp. 273-315.
	Using the system in my job increases my productivity.	Davis F. D. (1989), “Perceived usefulness, perceived ease of use, and user acceptance of information technology”, <i>MIS quarterly</i> , pp. 319-340.
	Using the system enhances my effectiveness in my job.	DAVIS F. D., BAGOZZI R. P. and WARSHAW P. R. (1989), “User acceptance of computer technology: A comparison of two theoretical models”, <i>Management science</i> , vol. 35, n. 8, pp. 982-1003.
	I find the system to be useful in my job.	VENKATESH V. and DAVIS, F. D. (2000), “A theoretical extension of the technology acceptance model: Four longitudinal field studies”, <i>Management Science</i> , vol. 46, pp. 186-204.

Perceived Ease of Use	My interaction with the system is clear and understandable.	VENKATESH V. and BALA H. (2008), "Technology acceptance model 3 and a research agenda on interventions", <i>Decision Sciences</i> , vol. 39, n. 2, pp. 273-315. Davis F. D. (1989), "Perceived usefulness, perceived ease of use, and user acceptance of information technology", <i>MIS quarterly</i> , pp. 319-340. DAVIS F. D., BAGOZZI R. P. and WARSHAW P. R. (1989), "User acceptance of computer technology: A comparison of two theoretical models", <i>Management science</i> , vol. 35, n. 8, pp. 982-1003.
	Interacting with the system does not require a lot of my mental effort	
	I find the system to be easy to use.	
	I find it easy to get the system to do what I want it to do.	
Computer self-efficacy	I could complete the job using a software package ...	VENKATESH V. and BALA H. (2008), "Technology acceptance model 3 and a research agenda on interventions", <i>Decision Sciences</i> , vol. 39, n. 2, pp. 273-315. COMPEAU D. R., and HIGGINS C. A. (1995), "Application of social cognitive theory to training for computer skills", <i>Information Systems Research</i> , vol. 6, pp. 118-143.
	... if there was no one around to tell me what to do as I go...	
	... if I had inly the software manual for reference...	
	... if I had seen someone else using it before trying it myself...	
	... if I could call someone for help if I got stuck...	
	... if someone else had helped me get started...	
	...if I had a lot of time to complete the job for which the software was provided...	
	... if I had just the built-in help facility for assistance...	
	... if someone showed me how to do it first...	
	... if I had used similar packages before this one to do the same job.	
Perception of External Control	I have control over using the system.	VENKATESH V. and BALA H. (2008), "Technology acceptance model 3 and a research agenda on interventions", <i>Decision Sciences</i> , vol. 39, n. 2, pp. 273-315. MATHIESON K. (1991). "Predicting user intentions: Comparing the technology acceptance model with the theory of planned behavior", <i>Information Systems Research</i> , vol. 2, pp. 173-191. TAYLOR S. and TODD P. A. (1995), "Understanding information technology usage: A test of competing models", <i>Information Systems Research</i> , vol. 6, pp. 144-176.
	I have the resources necessary to use the system.	
	Given the resources, opportunities and knowledge it takes to use the system, it would be easy for me to use the system.	
	The system is not compatible with other systems I use.	
Computer Playfulness (CPLAY)	The following questions ask you how you would characterize yourself when you use computers:	VENKATESH V. and BALA H. (2008), "Technology acceptance model 3 and a research agenda on interventions", <i>Decision Sciences</i> , vol. 39, n. 2, pp. 273-315. WEBSTER J. and MARTOCCHIO J. J. (1992), "Microcomputer playfulness: Development of a measure with workplace implications", <i>MIS Quarterly</i> , vol. 16, pp. 201-226. WEBSTER E. J. (1989). <i>Playfulness and computers at work</i> , New York University, Graduate School of Business Administration.
	... spontaneous	
	... creative	
	... playful	
	... Unoriginal	
Computer Anxiety (CANX)	The following questions ask you how you would characterize yourself when you use computers:	VENKATESH V. and BALA H. (2008), "Technology acceptance model 3 and a research agenda on interventions", <i>Decision Sciences</i> , vol. 39, n. 2, pp. 273-315. VENKATESH V. (2000), "Determinants of perceived ease of use: Integrating perceived behavioral control, computer anxiety and enjoyment into the technology acceptance model", <i>Information Systems Research</i> , vol. 11, pp. 342-365.
	Computers do not scare me at all.	
	Working with a computer makes me nervous.	
	Computers make me feel uncomfortable.	
	Computers make me feel uneasy.	
	Computers do not scare me at all.	
	Working with a computer makes me nervous.	
	I do not feel threatened when others talk about computers.	
	It wouldn't bother me to take computer courses.	
	Computers make me feel uncomfortable.	
	I feel at ease in a computer class.	
	I get a sinking feeling when I think of trying to use a computer.	
	I feel comfortable working with a computer.	
	Computers make me feel uneasy.	
Perceived Enjoyment (ENJ)	The following questions ask you how you would characterize yourself when you use computers:	VENKATESH V. and BALA H. (2008), "Technology acceptance model 3 and a research agenda on interventions", <i>Decision Sciences</i> , vol. 39, n. 2, pp. 273-315.

	I find using the system to be enjoyable.	DAVIS F. D., BAGOZZI R. P. and WARSHAW P. R. (1989), "User acceptance of computer technology: A comparison of two theoretical models", <i>Management science</i> , vol. 35, n. 8, pp. 982-1003.
	The actual process of using the system is pleasant.	
	I have fun using the system.	
Objective Usability (OU)	No specific items were used. It was measured as a ratio of time spent by the subject to the time spent by an expert on the same set of tasks. (Note: was operationalized by computing a novice-to-expert ratio of effort. During the training program, each participant was asked to perform a set of tasks using the new system. The system recorded the time each participant took to accomplish the tasks. The time was then compared to the time taken by an expert to accomplish the same tasks to determine a ratio, which served as the measure of objective usability for each participant.	VENKATESH V. and BALA H. (2008), "Technology acceptance model 3 and a research agenda on interventions", <i>Decision Sciences</i> , vol. 39, n. 2, pp. 273-315. VENKATESH V. (2000), "Determinants of perceived ease of use: Integrating perceived behavioral control, computer anxiety and enjoyment into the technology acceptance model", <i>Information Systems Research</i> , vol. 11, pp. 342-365.
Subjective Norm (SN)	People who influence my behavior think that I should use the system.	VENKATESH V. and BALA H. (2008), "Technology acceptance model 3 and a research agenda on interventions", <i>Decision Sciences</i> , vol. 39, n. 2, pp. 273-315. TAYLOR S. and TODD P. A. (1995), "Understanding information technology usage: A test of competing models", <i>Information Systems Research</i> , vol. 6, pp. 144-176.
	People who are important to me think that I should use the system.	
	The senior management of this business has been helpful in the use of the system.	
	In general, the organization has supported the use of the system.	
Voluntariness (VOL)	My use of the system is voluntary.	VENKATESH V. and BALA H. (2008), "Technology acceptance model 3 and a research agenda on interventions", <i>Decision Sciences</i> , vol. 39, n. 2, pp. 273-315. MOORE G. C. and BENBASAT I. (1991), "Development of an instrument to measure the perceptions of adopting an information technology innovation", <i>Information systems research</i> , vol. 2, n. 3, pp. 192-222.
	My supervisor does not require me to use the system.	
	Although it might be helpful, using the system is certainly not compulsory in my job.	
Image (IMG)	People in my organization who use the system have more prestige than those who do not.	VENKATESH V. and BALA H. (2008), "Technology acceptance model 3 and a research agenda on interventions", <i>Decision Sciences</i> , vol. 39, n. 2, pp. 273-315. MOORE G. C. and BENBASAT I. (1991), "Development of an instrument to measure the perceptions of adopting an information technology innovation", <i>Information systems research</i> , vol. 2, n. 3, pp. 192-222.
	People in my organization who use the system have a high profile.	
	Having the system is a status symbol in my organization.	
Job Relevance (REL)	In my job, usage of the system is important.	VENKATESH V. and BALA H. (2008), "Technology acceptance model 3 and a research agenda on interventions", <i>Decision Sciences</i> , vol. 39, n. 2, pp. 273-315. DAVIS F. D., BAGOZZI R. P. and WARSHAW P. R. (1992), "Extrinsic and intrinsic motivation to use computers in the workplace 1", <i>Journal of applied social psychology</i> , vol. 22, n. 14, pp. 1111-1132.
	In my job, usage of the system is relevant.	
	The use of the system is pertinent to my various job-related tasks.	
Output Quality (OUT)	The quality of the output I get from the system is high.	VENKATESH V. and BALA H. (2008), "Technology acceptance model 3 and a research agenda on interventions", <i>Decision Sciences</i> , vol. 39, n. 2, pp. 273-315. DAVIS F. D., BAGOZZI R. P. and WARSHAW P. R. (1992), "Extrinsic and intrinsic motivation to use computers in the workplace 1", <i>Journal of applied social psychology</i> , vol. 22, n. 14, pp. 1111-1132.
	I have no problem with the quality of the system's output.	
	I rate the results from the system to be excellent.	
Result Demonstrability (RES)	I have no difficulty telling others about the results of using the system.	VENKATESH V. and BALA H. (2008), "Technology acceptance model 3 and a research agenda on interventions", <i>Decision Sciences</i> , vol. 39, n. 2, pp. 273-315. MOORE G. C. and BENBASAT I. (1991), "Development of an instrument to measure the perceptions of adopting an information technology innovation", <i>Information systems research</i> , vol. 2, n. 3, pp. 192-222.
	I believe I could communicate to others the consequences of using the system.	
	The results of using the system are apparent to me.	
	I would have difficulty explaining why using the system may or may not be beneficial.	
Behavioral Intention (BI)	Assuming I had access to the system, I intend to use it.	VENKATESH V. and BALA H. (2008), "Technology acceptance model 3 and a research agenda on interventions", <i>Decision Sciences</i> , vol. 39, n. 2, pp. 273-315. Davis F. D. (1989), "Perceived usefulness, perceived ease of use, and user acceptance of information technology", <i>MIS quarterly</i> , pp. 319-340. DAVIS F. D., BAGOZZI R. P. and WARSHAW P. R. (1989), "User acceptance of computer technology: A comparison of two theoretical models", <i>Management science</i> , vol. 35, n. 8, pp. 982-1003.
	Given that I had access to the system, I predict that I would use it.	
	I plan to use the system in the next <n> months.	
Use (USE)	Assuming I had access to the system, I intend to use it.	

	Given that I had access to the system, I predict that I would use it.	VENKATESH V. and BALA H. (2008), "Technology acceptance model 3 and a research agenda on interventions", <i>Decision Sciences</i> , vol. 39, n. 2, pp. 273-315. Davis F. D. (1989), "Perceived usefulness, perceived ease of use, and user acceptance of information technology", <i>MIS quarterly</i> , pp. 319-340.
	I plan to use the system in the next <n> months.	
	On average, how much time do you spend on the system each day? -1 month (T1-T2), 3 months (T2-T3) and 2 months (T3-T4).	

Managerial and technological challenges for climate finance. A multidisciplinary model based on AI for the assessment of sustainability

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Abstract

This research aligns with the themes of Horizon Europe, particularly with Pillar II, which aims to encourage interdisciplinary, cross-sectoral, cross-cutting, and cross-border collaboration to achieve sustainable development goals following the principles of the United Nations' Agenda 2030. The paper goes beyond the state of the art of the main studies on climate finance and the business opportunities arising from proposing new economic, financial, and entrepreneurial actions to combat climate change and contributes to developing an integrated multidisciplinary model for assessing the sustainability of companies operating in complex sectors with AI-based solutions.

Key words: *AI; climate finance; sustainability; managerial challenges; multidisciplinary model*

Framing of the research. *The current era is marked by dramatic climate change, economic crises, and growing global inequality, which necessitate a significant paradigm shift following digital transformation and sustainable practices. This change involves all entrepreneurial, social, and political actors, who must be encouraged to play a "responsible" and proactive role in creating shared value. Following the Paris Agreement of 2015, initiatives for climate finance have been called for to facilitate the economic transition towards sustainable systems with reduced environmental impact. Globally, G20 leaders have expressed their intention to increase investments in low-carbon infrastructure and channel resources towards other climate-friendly solutions and sustainability in general. Initially, greater focus has been placed on environmental factors, their connection to finance, and business models that support these initiatives. These actions prompt managers, banks, and financial intermediaries to consider environmental impact assessments and sustainability in their decision-making explicitly. Specifically, they will be inclined to provide credit and allocate capital to companies that demonstrate a high environmental impact assessment and overall sustainability awareness.*

Given these premises and the impulses induced by climate finance on the overall economic and business system, the research objective is to integrate the issue of climate change into investment policies and new business models that effectively balance profitability and sustainability by following the potential of new technologies such as AI.

This research project aligns with the themes of Horizon Europe, particularly with Pillar II, which aims to encourage interdisciplinary, cross-sectoral, cross-cutting, and cross-border collaboration to achieve sustainable development goals following the principles of the United Nations' Agenda 2030, the Paris Agreement under the United Nations Framework

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Convention on Climate Change, and the competitiveness of Union industries. The research objectives are fully consistent with the missions of Horizon Europe, particularly the missions “Adapting to climate change, including societal transformation,” “Climate-neutral and smart cities,” and “Healthy oceans, seas, coastal, and inland waters.” This research is also strongly aligned with the priorities defined in the National Recovery and Resilience Plan 2021-2027 framework. The activities and objectives of the project are highly consistent with Research Area 5.5 and its intervention area 5.5.2 “Climate change, mitigation, and adaptation” of the National Recovery and Resilience Plan 2021-27. In particular, Articulation 5, “Methods and tools for accounting for greenhouse gas emissions,” aims to develop improved and cross-cutting methods and tools for assessing the sustainability of socio-economic systems. This objective is fully congruent with the goals of this project. From a legislative point of view, a technology such as AI could develop fundamental improvements to reduce bureaucracy. Indeed, the Commission and the EU Parliament have recently made the first regulatory proposals in a sustainable perspective with an EU Regulation on AI. In this direction, the following pillars are envisaged: a) the adoption of guidelines by the Commission on standard voluntary use clauses to be adopted to ensure that commercial counterparties respect the principles and rules established in the company’s code of conduct or the operational prevention plan that has been prepared, as well as in relation to the contractual guarantees that must be provided by the other subjects participating in the value chain; b) the issuing of guidelines, including specific ones, to certain sectors or certain negative impacts that are intended to be prevented or mitigated, in order to assist public and private authorities in defining the methods with which due diligence obligations must be fulfilled; c) initiatives aimed at collecting and sharing information - between public institutions, companies and their commercial partners, and also acquired through consultations with the various “stakeholders” - which favor the fulfillment of the obligations imposed, also through websites, platforms or dedicated portals; d) the provision of contractual clauses and specific financial instruments aimed at supporting the sustainable transition; e) finally, the establishment by the Commission of a European network of supervisory authorities - designated by each Member State to supervise the implementation of the directive - with the aim of facilitating the coordination and alignment of regulatory practices, supervision and sanctions.

Purpose of the paper. Although the awareness of the international community on sustainability issues, climate change, and the crucial role played by companies has significantly increased, the lack of tools for quantifying financial and non-financial indicators discourages both companies in the process of identifying measurement strategies of sustainability and investors in investing in eco-sustainable financial products.

The explorative research try to find innovative solutions by using AI and includes an initial review phase of the main studies on climate finance (Bhattacharjee and Bansal, 2023; Fischer et al., 2021) and the business opportunities arising from proposing new economic, financial, and entrepreneurial actions to combat climate change. The second phase concerns collecting and analyzing data on climate finance and defining and developing research methodologies. The third phase analyzes the results, impacts and managerial and legal implications.

Therefore, the present research goes beyond the state of the art and contributes to developing an integrated multidisciplinary model for assessing the sustainability of companies operating in complex sectors with AI-based solutions (Leal Filho, et al., 2022). Furthermore, the project’s innovative potential lies in the researchers’ ability to quantify and integrate socio-economic, financial, and environmental indicators into research. The complexity of the obligations introduced and the need to prepare tools capable of facilitating their fulfillment has led the European legislator to contemplate a heterogeneous plurality of measures, under the banner of cooperation and exchanging information flows between the various organizations involved. For these reasons, from a multidisciplinary and interdisciplinary perspective, the research aims to evaluate the impact of climate finance actions on business strategies following AI practices, the development of green practices by the latter, and the role of financial intermediaries and society with reference to legal profiles.

In particular, developing an integrated multidisciplinary model for assessing the sustainability of companies operating in complex sectors such as the blue economy and green practices for creating value between the various actors involved. This multidisciplinary model represents a step forward compared to existing models that may be more sectoral or focused on individual aspects of sustainability. Furthermore, the integration of climate change into companies’ business models that use AI to maximize profitability and sustainability represents a conceptual and methodological innovation compared to the representation models existing in the literature, which are limited to the evaluation of economic sustainability and coherence between the different components of the business model. Finally, the evaluation of the actual impact of climate finance actions on the reduction of climate-altering emissions and climate change provides a concrete basis for evaluating the effectiveness of such actions and represents an innovative contribution to the field of sustainable finance. Furthermore, from a legislative point of view, to implement the regulatory framework, it will be necessary to verify the application of the various regulations and ensure that the scope of the envisaged obligations extends, according to a “cascade system,” to all commercial partners, through the provision of contractual guarantees that ensure the compliance with the established code of conduct and whether, if necessary, it is necessary to introduce other legislative and negotiating mechanisms to implement preventive measures to prepare new virtuous practices for the benefit not only of companies but also of the community.

Methodology. The design approach is based on understanding the impacts of climate change and mitigation policies on the real economy and business organizations. Furthermore, the relevance of sustainability risks for society and the economy is considered, which has pushed international institutions towards a new orientation of business activities towards sustainable practices. Therefore, the reference models and assumptions concern the interaction between climate change and the effects on companies.

Furthermore, this approach requires an interdisciplinary vision that considers environmental sustainability and the economic, financial, legal, and management aspects. This research proposal is a unitary and interdisciplinary project that will be carried out thanks to the joint effort of two operational units: the Department of Business and Quantitative Studies (DISAQ) and the Department of Science and Technology (DIST) of the University of Naples Parthenope.

For these reasons, the project is positioned within the “from idea to application” spectrum as it aims to develop practical and implementable solutions based on the research carried out. Qualitative and quantitative methodologies will be used to evaluate companies’ financial performance, sustainability risk, and competitiveness. At the same time, the scientific and technological solutions available to address risks and promote sustainability are explored.

Subsequently, the methodological approach follows the analysis of documentary reports on climate finance, which are analyzed to acquire specific knowledge of this complex ecosystem involving different actors. Furthermore, consistent with the exploratory nature of this study, the research adopts a qualitative approach through semi-structured interviews in order to provide detailed and in-depth analysis at multiple levels (national, regional, and local). For data triangulation (Yin, 2003), exploratory research considers other data sources such as online documentation, official archival documents, direct and indirect observations. The research requires approximately 90 minutes for in-depth interviews with the stakeholders described in the next section. As a result, all the data collected will be stored and managed by the NVivo software which assigns tags to each slice of information that emerges from the different data sources.

Official data and other sources of information will be used to frame the context, to interpret better, and, when possible, to confirm the information derived from the interviews. The research also makes use of:

- bibliographic and website analysis;
- direct participation in workshops on the context;
- exemplary case studies and analysis of best practices.

Preliminary Results. Our preliminary results are classified in three directions that show the evolutionary path of the AI-based solutions that solve the managerial challenges for climate finance: 1) the planning of sustainable business models devoted to developing specific measures to improve the business processes within different complex sectors; 2) Tech-enabled services to increase and expand the established dialogue between different stakeholders involved (e.g. customers and policy makers) not only in a physical structure but also via technological tools (e.g. medical devices) and other elements made available from Industry 4.0 for delivering services; 3) The multidisciplinary value drivers derived from the use of AI-based solutions as the EU Regulation on artificial intelligence focuses on the risk-based approach and the principles of security, transparency, traceability and non-discrimination that must also guide AI systems regarding ESG criteria. AI has the potential to revolutionize climate finance by improving efficiency, accuracy, and transparency while facilitating investments in sustainable projects and mitigating climate-related risks. However, addressing ethical considerations is crucial and ensuring that AI technologies are deployed responsibly to achieve positive environmental outcomes. AI can analyze vast amounts of data to assess and manage risks associated with climate-related investments. It can predict the impact of climate change on different sectors and geographical regions, helping investors make informed decisions. AI can develop sophisticated models to assess climate-related risks to investment portfolios. By considering various scenarios and factors such as extreme weather events, sea level rise, and policy changes, AI can help investors understand and mitigate potential losses.

Regarding the environmental sustainability of the investigated systems, it is evaluated using environmental accounting techniques. In particular, the Life Cycle Assessment (LCA), an environmental accounting methodology standardized by the ISO 14040 and ISO 14044 standards, will be used. This methodology allows the generation of a set of multi-criteria indicators of environmental cost (consumption of resources) and environmental impact (contribution to climate change and other environmental issues) with a life cycle perspective, i.e. evaluating the environmental impacts generated in all phases of the production cycle of a good or service, starting from the extraction of raw materials up to the end of life. Furthermore, always in compliance with interdisciplinarity, an environmental impact assessment will be carried out using the new legislative principles of taxonomy and LOM (Loan Origination and Monitoring). In the context of this assessment, it will be considered how the application of these legislative principles affects the environmental impact generated by organizations and related economic activities. The practice of non-financial disclosure will be examined, which implies the communication of information on environmental performance, impacts and policies adopted by companies. In particular, it will be assessed how non-financial disclosure affects the process of collecting financial resources by companies and, consequently, the role of financial intermediaries. The effect of non-financial disclosure on companies will be examined, as well as on the risk assessment policies adopted by intermediaries. National and international developments, researches and innovative activities concerning the integration of these principles into the economic context will also be analysed, in order to provide a comprehensive overview and recommendations to promote sustainability and access to financial resources in line with such principles. The integration of the gender dimension into the research will depend on the specific relevance of the project. If relevant, gender differences in business dynamics, access to financial resources and business opportunities related to climate change mitigation activities will be considered. Inclusive approaches will be taken to ensure gender representativeness and equity in project analyses and recommendations.

Research limitations. This paper is not without limitations. Future research could conduct a comparative analysis to highlight similarities and differences among different complex sectors, or, additionally, it could investigate the role

of different actors in applying AI-based solutions (e.g. policy makers, decision makers and so on) or from a longitudinal perspective.

Managerial implications. *The expected impacts of the research project are consistent with the Horizon Europe themes with particular reference to pillar II. Specifically, the multidisciplinary integrated model that will be proposed will suggest good practices to companies, financial intermediaries, regulators, and other players in order to continue and achieve sustainable development objectives. An impact is expected regarding new environmental impact measurement models, assessments and improvements of existing regulations, financial instruments and business practices.*

The measures aim to maximize the opportunities for potential recipients. Therefore, a dissemination and exploitation plan of the results was implemented using multiple sources of evidence to interpret knowledge in practice.

One of the main phases of the research is to recognize the public potentially fascinated by the project results and innovative actions. The target groups to address are listed below: Universities and research institutions, Policymakers, Enterprises, financial intermediaries, and Legal operators.

Stakeholder mapping is key to disseminating project results through appropriate channels and tools. Indeed, we aim to disseminate and communicate the results externally through presentations of research papers at important public events (e.g. final project workshop) and presentations of works at international conferences. After each public event where project results are disseminated, a specific section on the official page of our university department's website should be dedicated within a week of the event. Using official websites and social media will help establish stakeholder engagement with project outcomes and generate peer-reviewed articles, book chapters, and reports dedicated to a scientific target audience in the future. The dissemination and communication plan plans to address and participate in high-profile academic conferences and workshops organized by global, European, and national institutions.

Originality of the paper. *To implement the regulatory framework, it will be necessary to verify the application of the various regulations and ensure that the scope of the envisaged obligations extends, according to a "cascade system", to all commercial partners, through the provision of contractual guarantees that ensure the compliance with the established code of conduct and whether, if necessary, it is necessary to introduce other legislative and negotiating mechanisms to implement preventive measures to prepare new virtuous practices for the benefit not only of companies but also of the community. Finally, a communication activity within the group will be guaranteed by periodic debriefing meetings to guarantee a multidisciplinary approach. Moreover, the complexity of the introduced obligations and the need to establish tools to facilitate their compliance have led the European legislature to adopt a diverse range of measures, emphasizing cooperation and information exchange among the various involved organizations.*

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Looking for a dominant design in car battery technologies: Influencing factors and strategic implications

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Abstract

Automotive industry is one of the most important and profitable industrial sectors worldwide with more than 85.5 million vehicles produced in 2022 (Placek, 2023) and a value of approximately \$2520 billion in 2022 (Carlier, 2023). One of the grand challenges for incumbent companies and future competition is the transition towards a mobility based on electric vehicles, also deeply intertwined with the growing attention to the environmental critical issues connected to the use of fossil fuels and sustainability.

Vehicles based on electric powertrains have been recognized as one of the most disruptive and critical innovation in the entire automotive industry since the invention of the ICE (Internal Combustion Engine). It is indisputably considered as the innovation which can introduce a new dominant design in the sector (Jacobides et al., 2016) with the potential to lead to irreversible changes in future competition. In fact, the new propulsion system can potentially question the role of the OEMs (Original Equipment Manufacturers), such as Volkswagen, PSA, Toyota, etc., the architecture of the supplier relationships and the distribution of the value along the supply chain.

To date, the battery technology is identified as an important bottleneck in determining the competitive moves of incumbent OEMs and potential new entrants, and it is configured as one of the main - if not the most important - key factor for the success of electric vehicles. Broadly speaking, currently battery technologies can be divided into two broad categories: the lithium-ion batteries and the alternatives technologies such as the nickel based. Despite this broad categorization, there are numerous types of batteries commercially available, installed on vehicles, with common operating characteristics, but different with respect to specific key performance indicators (KPIs) that customers and car manufacturers are looking for.

This contribution analyzes from a technical point of view the battery technologies currently installed in vehicles, available worldwide, to evaluate the ongoing technological trajectories, within a sector that is experiencing an era of ferment still uncertain as for the future dynamics (Murrmann and Schuler, 2023). The focus of the analysis, which adopts a historical perspective, is on passenger cars and the related electric-based models marketed between 2012 and 2023. For each model, subsequently reclassified by segments according to the Euro Car Segment classification, the technology at the base of the battery pack is evaluated. Data are collected from an international database which provides timely information on the topic. The results highlight how - to date - a dominant design from a technological point of view has not been achieved. Furthermore, the analysis of the differences which emerge in the adoption of types of batteries in relation to different electric powertrains and passenger car segments helps to understand the factors that influence the process of establishment of a dominant design. We observed also the relationship between the KPIs of battery technology and the users' priorities in terms of product attributes. Implications for world car manufacturers' strategies are finally drawn.

Key words: *electric vehicles; battery technologies; era of ferment; dominant design; automotive industry*

Framing of the research. *Throughout the evolution of the automotive industry, all technology developments have been focused on the improvements of the ICE (Internal Combustion Engine) technology, based on fossil fuels, and its surrounding sub-systems and components. Over time, in the ICE technology regime OEMs have strengthened their control on the two main technical bottlenecks of vehicles: the powertrain design and the system integration capabilities. The ability to manage the two main technical bottlenecks of ICEVs (Internal Combustion Engine Vehicles) and the hierarchical control on the supply and marketing chains have been turned into a strategic advantage (Baldwin, 2014), thus allowing OEMs to capture the largest share of rents across the value chain. Tesla's successful entry in the full electric vehicles market has given the start to an era of ferment, centered on the technological shift from ICEVs to BEVs*

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(Battery Electric Vehicles). This transition has been mostly represented in the literature as a competency-destroying innovation for OEMs, that makes their current knowledge obsolete, leads to a new dominant design in the sector (Foster, 1986; Jacobides et al., 2016), ultimately mining the OEMs possibility to establish for BEVs the same degree of control over the division of labor and the rent distribution across the value chain. Authors claiming for discontinuity in competitive positioning have highlighted four main points in supporting that view (MacDuffie, 2018; Perkins and Murmann, 2018). First, BE is configured as a completely different powertrain, with the most important core subsystems that differ from those that are key in ICE, thus impacting negatively on incumbent OEMs and favoring the new entrants. Second, the simpler structure of vehicles based on BE powertrain seems to favor modularity, thus removing some of the interfaces existing between the technical structures in ICE vehicles, and reducing the system integration requirements. Third, OEMs legal and certification capabilities related to ICE powertrain may become obsolete or irrelevant. Fourth, the relationships between OEMs and suppliers may be deeply reshaped, so as the business model to be adopted to capture the value along the supply chain.

However, there is no full consensus about the phase of transition the car industry is today living. Other contributions have recently introduced new elements into this debate, offering a more nuanced and multifaceted frame to understand the transition. While it is undisputable that ICE and BEV powertrains show strong differences in technical terms, new studies have argued that these technologies could be similar at the system level (Murmann and Schuler, 2023), so that it would be possible a transformation of OEMs design and system integration capabilities. The transition from ICEVs to BEVs is then likely to require changes for OEMs in a less disruptive way than what expected. This could be related to a couple of reasons mainly. First, recent analyses found a lower than expected level of modularity in BEVs at the system level, which means that the system integration requirements remain high in the new technology (Murmann and Schuler, 2023). Based on their high system integration capabilities, OEMs “will likely maintain their control of the architecture of the automotive industry” (Murmann and Schuler, 2023, p. 147), while new entrants could succeed only in few circumscribed cases. Second, in the BEVs system, the component that represents the most challenging technical bottleneck to manage for OEMs is the electric battery subsystem, whose technical attributes could limit the driving range of the vehicle and result into longer than accepted recharging breaks for user. Within this perspective, it is likely that the value associated with the new technology could migrate from incumbent OEMs to suppliers of car battery cells (e.g., CATL, Samsung) in a larger portion than to newcomers (e.g., Tesla). At the early stages of introduction of BEVs in the market, OEMs were forced to source from Chinese batteries producers who - meanwhile - rapidly expanded to keep the pace with the growing volume of batteries required by the national BEVs manufacturing industry, the largest in the world to date. To counteract the potential stronger bargaining power of battery suppliers, OEMs should react by investing massively in the design and manufacture of their own battery cells. Whether OEMs can succeed by simply revising the traditional system integration model will depend on the financial resources that they will be able to invest so as to reduce the R&D capabilities gap with respect to the specialized battery cell suppliers. In such a way, incumbents will be likely to reduce the technological dependence from battery suppliers, and preserve a part of the control over the supply chain for strategic components.

Purpose of the paper. The extant debate on the transition towards electrification in car industry has been vibrant but up to now with inconclusive results about the degree of evolution in the process of establishment of a dominant design in technology and about the main effects on firms’ strategies and future competition. There is still considerable design competition as firms experiment with different forms of the technology (Anderson and Tushman, 1990) and/or tend to adopt different battery technologies for different car segments. Based on a rich dataset, the purpose of the present exploratory contribution is to shed light on some factors that have an influence in the emergence of a dominant design in the battery technology and, in so doing, in shaping the transition to BEVs. To do that, among the various factors that may have an influence on the dominant design process, we will focus on powertrain types and car market segments.

Methodology. We adopt a historical analysis perspective (Nelson et al., 2018) based on data collected from secondary sources. The main source used for the data collection is an international database provided by ICE-Canton. The data collected refers to the time frame 2012-2023, the data relating to 2023 refers to the first nine months of the year. The database allows to collect data on vehicles marketed worldwide with identification by model, type of powertrain, and definition of the specific battery pack technology for BE based vehicles.

From a technological point of view the alternative powertrains compared to the pure ICE are: plug in hybrid electric vehicles (PHEVs), full hybrid electric vehicles (FHEVs), mild hybrid electric vehicles (MHEVs) and pure battery electric vehicles (BEVs). We consider all of them as part of the electric powertrain vehicles (EPVs), as opposed to ICE powertrain. The focus of the analysis is on passenger car models, subsequently reclassified according to the Euro Car Segment (European Commission, 1999) (Tab. 1).

Tab. 1: Definition and examples of Euro Car Segments.

Euro Car Segment	Definition	Examples of models
	Microcar	Renault Twizy, Smart ForTwo
A	Minicars	Fiat 500, Renault Twingo
B	Small cars	Ford Fiesta, Opel Corsa
C	Medium cars	Honda Civic, Ford Focus
D	Large cars	Alfa Romeo Giulia, Audi A4
E	Executive cars	Audi A6, BMW 5 series
F	Luxury cars	Audi A8, BMW 7 series
S	Sports coupé	Mercedes-Benz S-Class, Porsche Panamera
M	Multi-purpose cars	Citroen C3 Picasso, Ford B-max

Source: Own elaboration

As for the battery type, from a technological point of view, lithium is the mineral used to realize most of the battery installed in electrified cars, while alternatives are based on nickel. It is then possible to classify the battery pack according to two large families: one including technological variations based on ternary lithium-ion depending on the metals used to improve the performance of lithium ions (LFP, LMO, LMP, NCA, NMC, NMX, SCiB); one including alternatives technologies based on nickel (Zebra, Ni-H, NiMH). Findings based on types of batteries are partially limited in terms of consistency, due to data constraints in the identification of the technology in the selected database (lithium-ion and tertiary lithium-ion batteries).

To enrich data interpretation, we identified a number of KPIs that we consider as relevant in the comparison of battery technologies (Battery University, 2021). In Table 2 a short list of some KPIs is exhibited, including definitions and evaluated performance by technology battery drawing on a collection of various technical sources and rated by one of the Authors with competences in chemical engineering. Due to the absence of a sufficiently homogeneous collection of technical data, other important KPIs are not considered in this assessment: Capacity; State of charge; Depth of discharge; Cost; Overall sustainability.

Tab. 2: KPIs in BEVs.

KPIs	Definition	Most diffused types of battery technology: Comparative assessment (*)
Voltage	Amount of electrical potential a battery holds	NMC = 5; LFP = 4; SCiB = 2; NiMH = 1
Energy density vol.	Battery capacity in volume	NMC = 6; LFP = 5; SCiB = 3; NiMH = 2
Energy density mass	Battery capacity in weight	NMC = 6; LFP = 3; SCiB = 2; NiMH = 2
Charging time	Time taken for a fully discharged cell to be fully charged	NMC = 1; LFP = 6; SCiB = 7; NiMH = 1
Energy efficiency	Ratio of average discharging voltage to average charging voltage	NMC = 7; LFP = 7; SCiB = 3; NiMH = 1
Life Cycle	N. of charging and discharging cycles after that the battery capacity drops below 80% of the nominal value	NMC = 3; LFP = 6; SCiB = 7; NiMH = 3
Self-discharge ratio	Reduced state of charge of the battery due to internal chemical reactions	NMC = 4; LFP = 4; SCiB = 6; NiMH = 1
Thermal runaway	Risk of uncontrollable increase in temperature	NMC = 2; LFP = 4; SCiB = 4; NiMH = 7

(*) Value from 1 (low performing) to 7 (high performing)

Source: Own elaboration from various authors

Results. Tesla Motor has been the first firm to successfully commercialize a BEV, despite OEMs have tried before by launching experimental models without succeeding (Toyota and General Motors), at the end of last century. The success of Tesla in its pioneering effort in relation to BEV market (Perkins and Murmann, 2018) has paved the way to a growing worldwide diffusion of vehicles based on the wider family of electric powertrains (Tab. 3). Recent industry data show an acceleration in the growth of the overall number of BEVs new models and sold volumes.

Tab. 3: Worldwide diffusion of BEVs.

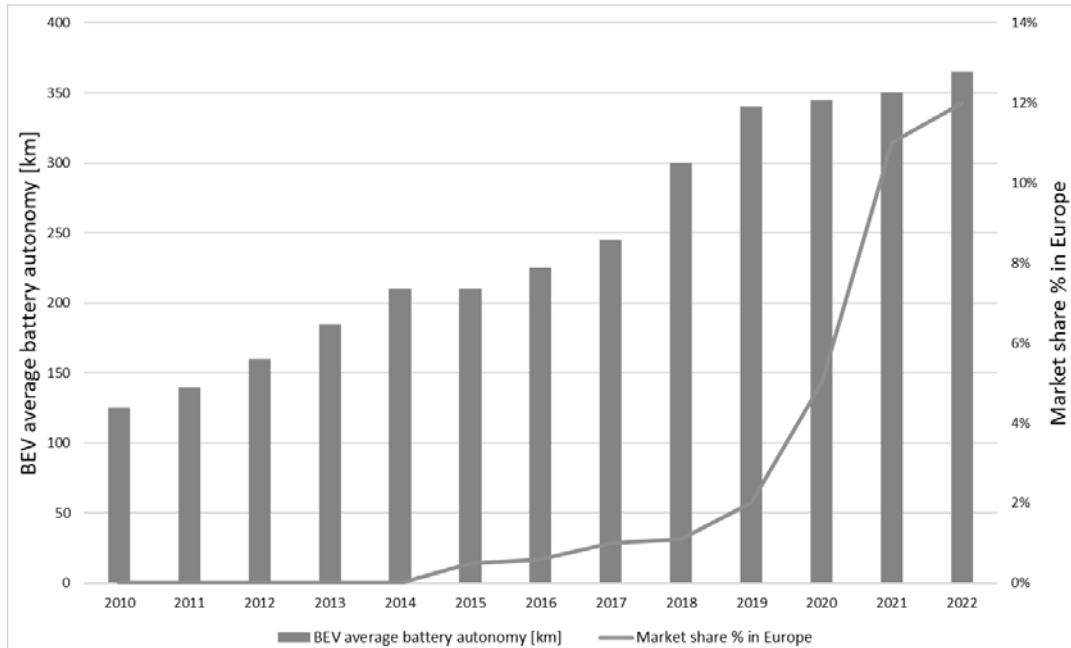
Year	N. of vehicle models	% Cumulative	Stock (Million units)
2012	82	5.7%	0
2013	85	11.5%	0.4
2014	19	12.8%	0.7
2015	31	15%	1.3
2016	120	23.2%	2.1
2017	104	30.4%	3.1
2018	85	36.3%	4.9
2019	110	43.8%	7.3
2020	222	59.1%	10.2
2021	182	71.7%	16.4
2022	221	86.9%	26.1
2023 (*)	190	100%	Not available

(*) data updated at September 2023

Source: Own elaboration

The turning point occurred approximately in 2019. After that year, OEMs have strongly increased the introduction in the market of new models, at the time when batteries technology reached a sufficient level of maturity in terms of extended battery life (battery autonomy), presumably the main barrier slowing down consumers' preferences shift to BEVs. This confirms the strict relationship between technological evolution of the core batteries subsystem and market acceptance of the BEVs product, as for example data referred to the sophisticated European consumer markets for passenger cars seem to highlight (Fig. 1).

Fig. 1: Battery autonomy and market share for BEVs in Europe (2010-2022).



Source: Own elaboration

As far as different battery technologies, it emerges that some types of battery are not widely diffused, while there is a polarization towards certain technologies (Tab. 4). The most diffused appears to be the lithium-ion batteries (specifically NMC, LFP, SCiB) and the NiMH Nickel-based battery. Some of the technologies (NCA, LMP, LMO, Ni-H, NMX and ZEBRA) have a percentage of diffusion below or equal to 1% each at world level, so that they can be reasonably considered negligible in the overall evolutionary context of technology for batteries, and they will not be included in the analysis in relation to vehicles models.

Tab. 4: Worldwide diffusion of types of battery technologies 2012-2023.

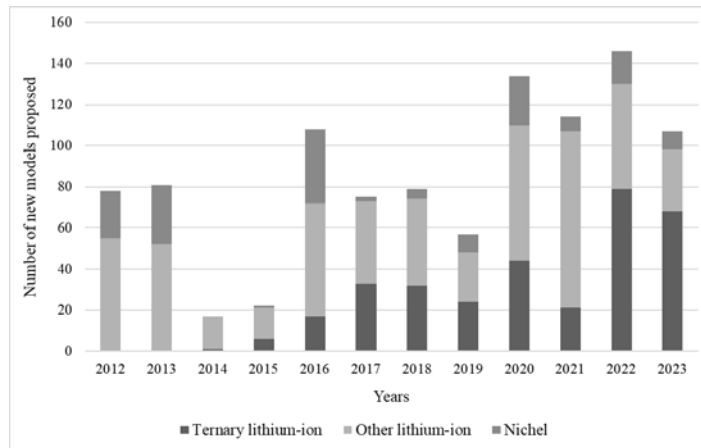
Family	Type of battery	% Cumulative
Lithium ion	Ternary-lithium ion (generic)	22.4%
	Tertiary Ternary Lithium-ion NMC	11.9%
	Tertiary Ternary Lithium-ion NCA	1%
	Tertiary Ternary Lithium-ion NMX	0.1%
	Other lithium-ion (generic)	36.7%
	Other Lithium-ion LFP	9.9%
	Other Lithium-ion LMO	0.5%
	Other Lithium-ion LMP	0.5%
	Other Lithium-ion SCiB	5.9%
Nickel	Ni-H	0.3%
	NiMH	10.8%
	Zebra	0.1%

Source: Own elaboration

The temporal analysis (Fig. 2) highlights that there has been a convergence in the last five years towards a battery pack in particular: the lithium-ion batteries. Thanks to their versatility, they are the most adopted by car-makers, while nickel-based batteries (NiMH and SCiB in particular) emerged as the main alternative technology in the last decade. However, while car-makers, especially for BEVs, seem to have started a convergence towards the lithium-ion battery family, it is not possible to anticipate which type of battery will emerge as the preferred for a future convergence into a clear dominant design. The most diffused types today are the NMC (Lithium Nickel Manganese Cobalt Oxides) and the LFP (Lithium Iron Phosphate) (Tab. 4). NMC currently offers the best compromise between low cost and high energy density, but the life cycle is still too short and safety issues persist. LFP is more based on cost-effective and environmentally friendly materials, with high safe and a long service life, and an excellent thermal stability. However,

the energy density is lower and the cold weather performance is weaker. The different technical characteristics of NMC and LFP are thus reflected into advantages and disadvantages in terms of users' evaluation of the product attributes, and no bundle of technical properties / product attributes is clearly crowding out less preferred combinations of properties / attributes. Not surprisingly, both technologies are still in a phase of constant technological evolution. Technological uncertainty is still high and no clearly dominant design has been emerged yet.

Fig. 2: Worldwide diffusion of types of battery technologies 2012-2023



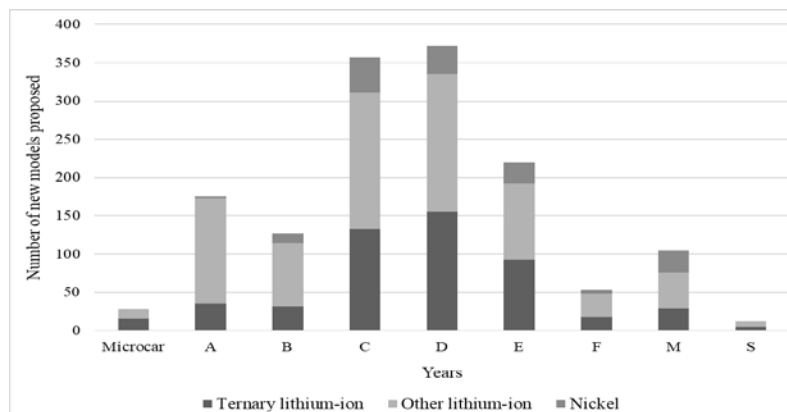
Source: Own elaboration

It is well known in the technology management literature that designs and standardization processes sometimes emerge as dominant not only for the technical superiority, but due to specific market conditions and users' preferences, that may incentive an alternative that not necessarily is the superior one in terms of intrinsic performance. In the context under investigation, for instance, this may happen because a particular battery technology is mounted in the most successful products or in the most rapidly growing markets segments. It is then important to explore the adoption of batteries technologies in relation with two variables: the type of BEVs powertrain considered, because different needs and technical conditions lead to different combinations of powertrains and battery technologies; and the technical-commercial segments where the car is positioned, that are sensitive to the market positioning choices of OEMs and to the product strategies they adopted to enter the electric vehicles market.

Concerning powertrains, findings show that: lithium-ion batteries are used systematically across all the different BEVs (a partial exception is given by the prevalent use of SCiB (LTO) technology for the MHEV powertrain); nickel-based batteries, while mounted in each type of powertrain, are highly concentrated on FHEVs (NiMH, in particular, is the nickel-based technology used by Japanese makers, primarily Toyota, on PHEVs). Considering the models proposed in the 2019-2023 period, the period of stronger evolution in the BEVs industry, the share of the different battery technologies installed in the two world most diffused powertrains (full electric and PHEV) did not change significantly. Overall, neither a clear convergence on a dominant technology nor a strong battery specialization by powertrain are observed at the level of data aggregation used in this analysis.

Concerning car market segments (Fig. 3), overall, the distribution of battery technologies seems to be influenced by different segments of adoption. There is a connection between the technology of batteries and the power input required by models addressing to different segments.

Fig. 3: Worldwide diffusion of battery technologies by type in relation to passenger cars segments



Source: Own elaboration

A valuable point of view is offered by adopting a temporal perspective in the use of battery technologies by segments. It unveils an incremental innovation path followed by OEMs, which, in the early years of market introduction of BEVs, when the battery technology was less developed, strategically addressed their new models to the lower car segments, hence vehicles requiring less power, so as to exploit at best the technologies available. Later, as the battery technology improves, producers invested more and more in new models positioned into higher segments (e.g., segments D, E, F), which require higher energy density, one of the most important KPI of a battery strictly associated with car riding performance. This suggests that, first, a clearly superior battery technology, able to cover all the market segments in a sufficiently performing way, has not yet been identified; second, even the slight degree of specialization of battery technologies by market segments is not likely to accelerate a process of convergence towards a dominant design, as the overall structure of car market segments is quite stable over time in terms of relative size and technical requirements by users.

Overall, the BE technologies are still in the fluid phase, in line with the classical model proposed by Utterback and Abernathy (1975). Analogously, at the level of firms' competition, we are still currently living in an era of ferment (Anderson & Tushman, 1990). While the BEVs are getting stronger in the market and gradually eroding shares to ICEVs, uncertainty persists at the supply side on which battery technology will emerge as dominant design (if any); and, at the demand side, on which will be the structure of the product attributes that will fit firms' product-market strategies and users' preferences. On the one hand, the BEVs technologies have reached a sufficient level of technological maturity to make them ready to enter the mass-market and strengthen the process of erosion of ICEVs shares. On the other hand, BEVs currently available in the market have some price-related (e.g., purchase prices; electricity vs fossil fuels costs) and performance-related (e.g., driving range; charging time; safety issues) issues which do not fully encounter the expectations of the majority of customers. Therefore, the establishment of a dominant design for batteries, and the consequent standardization of manufacturing process, will require additional effort and investments from both battery suppliers and OEMs.

Overall, the analysis shows that the product design able to bundle together, within a unique battery technology, a combination of features that could fulfill at best the demands of the majority of the market (Anderson & Tushman, 1990) has not emerged till now. While it could be reasonable to predict that future advancements in R&D, for instance towards cobalt-free and nickel-free batteries, or towards solid electrolyte batteries, will be likely to open new avenues for technological convergence, a potential dominant design is today very difficult to be anticipated. The rush for the battery of the future is fuelling a great technology excitement. However, whether the future dominant design will come out from significant improvements of already existing battery technologies or from a new or relatively young disruptive technology (e.g., hydrogen fuel cells) is something that cannot be so easily predicted.

The absence of a still consolidated dominant design in batteries technology leaves the room for different evolutionary scenarios in the worldwide car-makers competition. A first scenario is based on the vertical integration strategies of OEMs that are strongly investing in the internalization of the production of battery cells, with the main aim to become independent from the large Chinese battery producers (Moretti et al., 2022). A second scenario, that may partially overlap with the first one, is based on strategies of OEMs that respond with a systematic recourse to alliances with leading battery suppliers. Many OEMs have indeed already started to establish collaborations with the most relevant battery manufacturers (e.g., GM and Ford with LG, BMW with Northolt). In addition, world leading OEMs have established joint ventures with Chinese manufacturers that are fully-integrated in the production of batteries (e.g., BYD) or that can share strong relationships with local battery producers. A third scenario is based on strategies of OEMs (e.g., Toyota) that have not still opted for a full electric vehicle model, so that decisions on which battery technology to invest on are strictly related to the product strategy that will be adopted.

Research limitations. This contribution is not exempt from some limitations. In particular, the nature of work-in-progress of this contribution presents a limited even if insightful overview of the emerging results, which can be further expanded and refined in the interpretation. First, the analysis can be further detailed by geographic area, in particular considering the relevant role of China and Chinese national companies in shaping potential dominant design for vehicle electrification. Second, the analysis can also extend to last mile freight transport vehicles in particular, and possibly, as a further step, also include trucks for long-distance freight transport which would however require additional KPIs for the technological analysis. Third, the analysis here deliberately did not distinguish by type of BE-based vehicle (EPVs): a more fine-grained analysis by single powertrain is likely to add new fruitful knowledge about how the technology convergence process is evolving or inhibited. Fourth, the analysis can be further detailed by brand and OEMs, also considering the strong impact that the strategies at a group level (e.g., Volkswagen) could have on accelerating technological convergence by stimulating competitors to adopt imitation strategies and isomorphic behaviors. Lastly, in this paper the simultaneous analysis of OEM battery technology strategies, with possible implications on the effects on convergence on economies of scale, has not been developed, due to data constraints.

Managerial implications. The managerial implications are linked to the issue of competition in the race for vehicle electrification. In particular, the technological analysis inherent to the heart of electric vehicles, i.e. the type of battery, is fundamental in evaluating the investment trajectories and strategies adopted by carmakers, as described at the end of the Results section.

Furthermore, the recent great acceleration towards BE-based vehicles is not only the consequence of new technologies introduction, but rather the result of a more complex combination of factors that can be studied in terms of policy implications. The institutional pressure towards a paradigmatic shift from fossil fuels to sustainable technologies for mobility, in the specific case of the passengers cars, is based on announcements of progressive abandonment and

future ban on traditional ICE, and the massive introduction of incentives for the adoption of BEVs (Magnusson & Berggren, 2011; Moretti et al., 2022). A better understanding of the state of evolution of the process of technical convergence towards a dominant design and of factors that affect that convergence should inspire policies at the supply-side level that help companies to address effectively their technological investments.

Originality of the paper. While still in an exploratory phase, this paper aims to contribute to the extant literature on car industry transition towards electrification, by offering some reflections upon the centrality of the dominant design formation process. Despite the expected relevance of this topic in advancing knowledge on the overall phenomenon of transition to electrification, in the management literature scant attention has been devoted till now to the nature and stages of evolution of the process of establishment of a dominant design in the battery technologies field, and how it may shape competition during the era ferment. While we agree that the transition to BEVs from ICEVs has passed the point of no return (Moretti et al., 2022), the path is still long and further milestones are to be reached in terms of technical advancements and goals associated with firms' competitive strategies.

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Disentangling the effect of Entrepreneurship Education on Student Entrepreneurship: a focus on pedagogical methods and impact indicators

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Abstract

Students' entrepreneurial intention (EI) is the result of a perception of desirability toward entrepreneurship (which includes perceived attitudes and subjective norm) and a perception of feasibility (which pertains to perceived control of behavior). At the basis of the cognitive process underlying intention, there are influences external to entrepreneurial activity. The study of these "exogenous variables" is currently one of the most debated topics in the literature on EI. Among these, entrepreneurship education (EE) has been recognized as a process that should act as a spring of encouragement for individual attitudes, skills and motivations and that should increase the awareness of entrepreneurship as a reasoned career choice. There is currently no definite agreement in the field about the objectives, methodologies and degree of influence of entrepreneurship education on the cognitive factors and future entrepreneurial behaviors of students. The aim of this study is to test the impact of EE on the EIs of university students, applying the theoretical lens of the Theory of Planned Behavior (TPB), also accounting for the effect of different pedagogical approaches. Study's findings show that entrepreneurial learning, course-derived inspiration, and resources utilization are all elements that significantly and positively impact EI and its antecedents according with the TPB. In addition, the study illustrated that entrepreneurship programs are also important sources of trigger elements and events, which inspire students, arousing emotions and changes in mindset. Finally, we found that practice-based course systematically led to better entrepreneurial outcomes in students. On these bases, we offer some practical insights to educators and policymaking.

Key words: Student Entrepreneurship; Entrepreneurial Intention; Entrepreneurship Education; Cognitive model; Pedagogy

Framing of the research. "Student entrepreneurship" is a very important and relevant area of research, which has emerged in recent years as a hot topic in the specific field of entrepreneurship. For scholars who are interested in the birth of new businesses, entrepreneurial intentions take on considerable relevance, to the point of wanting to investigate them in depth. The process of identifying the opportunity is clearly an intentional process and, therefore, in theoretical models and recent research on entrepreneurship, a fundamental emphasis has been placed on the concept of intention, a catalyst of the entire genesis of the new entrepreneurial initiative. This definition confirms the numerous psychological researches on entrepreneurship that to date have led to affirm that the latter is a human factor, that is, it concerns people with their own attitudes, propensities and motivations, and that it comes out of the vision, intentions and actions implemented to transform simple ideas into concrete products and/or services. Nevertheless, intentions are very difficult to analyze. Therefore, psychological research on this topic has been concerned with identifying models and measurement tools that are capable of identifying personal and behavioural characteristics and the determinants of the overall entrepreneurial action. Notable models of EI (Ajzen, 1991; Krueger & Carsrud, 1993, Shapero and Sokol, 1982) postulates that EI is the result of a perception of desirability toward entrepreneurship (which includes perceived aptitude and subjective norm) and a perception of feasibility (which pertains to perceived control of behavior). At the same time, these intentional models suggest that, at the basis of the cognitive process underlying intention, there are influences

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external to entrepreneurial activity. The study of these "exogenous variables" is currently one of the most debated topics in the literature on EI. Among these, entrepreneurship education (EE) has been recognized as a process that should act as a spring of encouragement with regard to individual attitudes, skills and motivations and that should increase the awareness in individuals of entrepreneurship as a reasoned career choice. EE is certainly shared as an element that can equip individuals with the concepts and skills to recognize opportunities that others have overlooked, to manage resources against risk, and to start a business. Still other authors talk about entrepreneurial behavior not exclusively aimed at creating a business, but see EE as a tool to develop and implement the so-called "entrepreneurial mindset", i.e. creativity, a dynamic approach to problem solving and initiative, strengthening self-esteem. In general, EE aims to develop entrepreneurial mindset and skills, including social-emotional skills such as self-confidence, leadership, creativity, risk taking, motivation, resilience and self-efficacy (Lüthje and Franke 2003; Cloete and Ballard 2011); a general awareness and perceptions of entrepreneurship (Fayolle et al. 2006; Souitaris et al., 2007); and the general business knowledge and skills needed to open and run a business, such as accounting, marketing, risk assessment, and resources mobilization (Karlan and Valdivia, 2011).

From the analysis of the literature on EE, it emerged that there is currently no definite agreement in the field of research about the objectives, methodologies and degree of influence of EE on the cognitive factors and future entrepreneurial behaviors of individuals. In the field of EE, there is in fact a wide range of pedagogical methods and approaches that have been tested and used (Hindle, 2007). These include the use of real and/or virtual cases, role-playing and problem-solving, and are applied through the elaboration or evaluation of a business plan, the development of a project for the creation of a new business, or exercises intended to modulate entrepreneurial behaviors and computer-based simulations. These methodologies also include more traditional and interactive approaches, such as interviews with entrepreneurs or the guidance and coaching of young entrepreneurs. However, there does not seem to be a universal pedagogical recipe on how to teach entrepreneurship and the choice of techniques and methods depends mainly on the objectives, contents and constraints imposed by the institutional context. "Learning by doing", a good example of an active method often praised by teachers in the field, is well suited to some pedagogical situations, while it can be for example particularly inadequate in others. The watchword in this sense is to be cautious, especially if we consider that to date too little research has been conducted on the evaluation of EE (Fayolle and Gailly, 2008; Nabi et al. 2017). It remains to be proven that one pedagogical approach is better than another, which offers interesting challenges for researchers in the coming years. A more general conclusion could perhaps be that the selection of pedagogical and teaching methods for each individual EE course should rely on the a priori adequacy and efficiency of the method with respect to the objectives, characteristics of the participants, content and constraints due to the institutional context.

A recent study conducted by Nabi and colleagues (2017), based on a meta-analysis of 159 papers published between 2004 and 2016, suggests an integrated teaching model framework for EE and the underlying pedagogical framework. In this important study, the authors suggest that in the field of EE, little has been said and tested about didactic pedagogies, and much more work needs to be built around subjective outcome indicators. Prior to them, Pittaway and Cope (2007) had already conducted a review of the literature on EE also concluding on the need to explore in managerial research and practice the relationship that links different pedagogical methods to students' entrepreneurial outcomes. Pedagogical research has always emphasized the relevance of impact measures. Nabi et al. (2017) also suggest that impact is an important element of any type of teaching program, and that for this reason it should be planned and defined already in the very early stages of course design (Fayolle and Gailly, 2008).

Purpose of the paper. The aim of this study is to test the impact of EE on the entrepreneurial intentions of university students, applying the theoretical lens of the Theory of Planned Behavior (Ajzen, 1991). Although the reported benefits of EE have been highly praised by researchers and educators in the field, the impact of entrepreneurship programs on attitudes and intentions remains to date relatively untested (Nabi et al., 2017).

In the psychological literature, intention has been found to be the best predictor of any planned behavior, particularly when the behavior is rare, difficult to observe, or involves a certain amount of time between programming and execution; entrepreneurship is a typical example of such intentional and planned behavior (Krueger and Brazeal, 1994). As a result, we have highlighted how intentions have been the subject of great interest in entrepreneurship research over time (Krueger and Carsrud, 1993). In these studies, career intention is thought to be a close antecedent of actual behavior. In turn, intentions are determined by attitudes, perceived behavioral control, and subjective norms, which are subject to external influences such as environmental and situational variables (Ajzen, 1991; Krueger et al., 2000). This study is part of the research that investigates such external influences, and tests the impact of EE as an "exogenous variable" on entrepreneurial attitudes and intentions.

When we talk about EE, we are referring not only to all those courses/programs at university level, which aim to develop entrepreneurial attitudes and skills, but also to a portfolio of complementary activities. On the basis of the different descriptions of entrepreneurship programs offered in the literature (e.g. Gartner and Vesper, 1994; Souitaris et al., 2007) and research on current supply within major Italian and foreign universities, we can observe that as a good practice, entrepreneurship programs include several activities that can be grouped into four distinct components: a) a teaching component, with one or more theoretical modules; b) a business planning component, which may include competitions, tutorship and mentoring for specific business ideas; c) an interaction with a practical component, which may include interactions with business practitioners or networking events; d) a university support component, which may include market research resources, meeting spaces, a pool of technology with commercial potential, and even start-up funding for student teams.

In their extensive review of the literature on EE, Pittaway and Cope (2007) conclude that there is an important research gap in the analysis and evaluation of the outcomes of entrepreneurship courses with respect to the divergent pedagogical methods and approaches adopted, and press for future investigation. Pedagogical methods and approaches may emphasize, e.g., "exploration, discussion, or experimentation (Bechard and Gregoire, 2005, p.111). As recently confirmed by Nabi et al. (2017), just as it is important to examine and evaluate a wide range of outcome measures, it is also necessary for research to examine EE from an analytical lens, focusing on the details and contents of the curricula as well as on the different underlying pedagogical models, regardless of mere methodological speculations. In fact, the often confusing and conflicting results in EE can generate from a wide variety and heterogeneity of methods, contents and pedagogical approaches employed within the courses (Fretschner and Weber, 2013). This is also complicated by the common lack of details on the pedagogical interventions analyzed (Martin et al., 2013), and by the need to include, in the assessment phase of the interventions, stronger, more robust and consolidated theoretical frameworks (Baptista and Naia, 2015; Fayolle and Gailly, 2008; Krueger, 2015; Lackeus, 2015). It is therefore essential to frame and evaluate the relationship between pedagogical content and methods and entrepreneurial outcomes within a coherent theoretical framework. Starting from these considerations, the study aims to fill the gaps found in the literature (Nabi et al., 2017; Pittaway and Cope, 2007), examining three different research questions:

RQ1) Do entrepreneurship education courses and programs increase students' entrepreneurial attitudes and intentions?

RQ2) What contents/benefits derived from the entrepreneurship course/program increase students' entrepreneurial attitudes and intentions?

RQ3) Is there a difference in impact between the different pedagogical approaches to entrepreneurship?

In this framework, pedagogical methodologies have been divided into four different categories: a) supply model (model that is applied in those contexts where the teacher is the active fulcrum of the teaching process (Bechard and Gregoire 2005), and takes the form of lectures, readings and listening, use of videos; the emphasis is placed on knowledge and theoretical learning, and procedural enforcement); b) demand model (knowledge and content are defined by students' needs and expectations; the most relevant pedagogical methods in this pedagogical approach are exploration, discussion and experimentation, which can be operationalized and defined through various forms and elements); c) competence model (an approach based on competences based on the concept of interaction between teacher and student; this model typically emphasizes those activities related to communication and discussion -such as seminars, presentations, debates, network exchanges, networking, etc.- and to the production of content -such as themes, animations, models, portfolios, business plans, etc.-; and d) hybrid model (a mixture of previous pedagogical models).

Only three articles in the existing literature compare entrepreneurship courses that adopt competing pedagogical methods. Lange et al. (2014), for example, suggest that experiential courses (with a mixture of demand and competence approaches) better predict multiple entrepreneurial behaviors: on the contrary, the rare behaviorist courses within the study (based for example on the imparting of knowledge for the drafting of a business plan) have been shown to be negative predictors of entrepreneurship. Similarly, Walter and Dohse (2012) compare active (constructivist) learning to traditional (behaviourist) learning in contexts where there was a weak or established entrepreneurial culture, finding that the constructivist model has a greater impact in terms of entrepreneurial intentions.

Overall, the review conducted by Nabi et al. (2017) showed that each category of pedagogical models (supply, demand, competence, hybrid) has a positive relationship with the lower-level impact indicators of the theoretical framework they propose (e.g. attitudes and intentions). However, the impact of the pedagogical models analysed depends largely on the objectives of the researchers, and there are still too few studies that directly compare the impact of different pedagogical approaches on different measures of impact. Considering also the fact that entrepreneurship courses and programs are increasing considerably, as well as the need to evaluate their impact, research increasingly needs evidence showing which pedagogical method works best and on which measure of impact (desired or current). The aim of the work is to contribute both to the theory of planned behavior (testing and applying the extended model in the Italian research context) and to the entrepreneurship literature itself, highlighting the effect of both the benefits perceived by students in entrepreneurship courses, and the different pedagogical approaches underlying the different entrepreneurial outcomes.

Methodology. *To answer the research questions of the study, and test the research hypotheses, we developed a structured digital questionnaire submitted to university students in various Italian academic poles. The administration of the questionnaire was completed between January and May 2021. Following the prescriptions recommended by Churchill (1979) and Kline (2005), all constructs adopted within the study were measured through groups of items, adapted from previous validated scales. For all items we performed a Principal Component analysis, calculating a component score. To verify the construct validity, the present study adopted the total variance explained percentage, eigenvalue, KMO, Bartlett sphericity test; to measure internal consistency we used Cronbach's α . The empirical procedure developed within the study followed three main phases. In the first step, in order to obtain standardized scores for all latent variables, we performed a confirmatory factor analysis, developed through the principal component method. In the second phase, the research followed the procedure developed and suggested by Baron and Kenny (1986) to test the mediation hypotheses. To test the hypotheses of the study (both direct and mediation) we adopted hierarchical OLS regression analysis, generating 7 statistical models. In the third phase, to study the effect of the different pedagogical approaches of entrepreneurship programs on students' attitudes and intentions, we used the one-way ANOVA analysis on the different*

scores (in the total sample) within the different pedagogical groups (supply, supply-demand and demand-competence pedagogy) as an independent variable. Within the study, 9 different university academic poles were involved. The students gave us the name(s) of the entrepreneurship courses in which they participated, specifying their nature (compulsory vs elective) and the pedagogical approach adopted (theoretical, based mainly on lectures by the teacher, reading of case studies; practical, focused on laboratory activities, teamwork, tutorship and mentoring; or a mixture of the two approaches). On the basis of the indications provided, and through a secondary research strategy we subsequently classified and codified the different pedagogical approaches adopted, as follows:

- Supply model (1): this category includes all courses of a theoretical nature, in which the teacher is the main active part and initiator of the teaching activity. The key methods based on the supply model are lectures, readings and listening, watching videos; So, here the emphasis is on theoretical knowledge and learning, and procedural application;
- Supply-Demand model (2): this hybrid category includes all those courses that, although focused on the transmission and imparting of knowledge, include some aspects of experiential learning, such as creative development exercises, and practical elaboration of a business plan;
- Demand-Competence model (3): this category includes those programs, generally of a predominantly practical-laboratory nature, which share the inclusion of an important component of realism, such as the proposal of a real-life problem to be solved or the practical elaboration of a business model. This approach is considered a very powerful tool, as although it represents a real challenge for the student, the skills and competencies acquired are quite widely transferable to the real world and concrete life situations.

Results. The results of the statistical regression analysis showed that the influence of EE on entrepreneurial intentions was found to be strong, significant and positive, consistent with several other important studies on the topic (Fayolle and Gailly, 2015; Bae et al., 2014; Karimi et al., 2016; Piperopoulos and Dimov, 2015; Zhang et al., 2014). Few studies, however, have analyzed specific components/benefits of entrepreneurship courses, to assess their impact on entrepreneurial intentions and attitudes individually (Souitaris et al., 2007, Nabi et al., 2018), also obtaining conflicting and inconclusive results. In our study, we found that educational support, entrepreneurial learning, course-derived inspiration, and the use of the resources offered within the course are all elements of EE that significantly and positively impact entrepreneurial intentions. Thus, our empirical results support that the presence and development of entrepreneurship programs within universities, boosting the development of knowledge and skills related to entrepreneurship, seems to successfully encourage entrepreneurial intentions in students and motivate the individual propensity to start new businesses. In addition, the study illustrated that entrepreneurship programs are also important sources of trigger elements and events, which inspire students (arousing emotions and changes in mindset). In fact, the inspiration derived from the course has turned out to be an extremely relevant component, among the benefits derived from entrepreneurship courses, in increasing entrepreneurial attitudes and intentions (Souitaris et al., 2007). In addition to direct effects, the study also supports most of the mediating hypotheses of the antecedents of the theory of planned behavior, i.e., entrepreneurial attitude, subjective norm, and perceived behavioral control (Ajzen, 1991).

Moreover, our results showed that among the three different pedagogical methods identified within the study, the Demand-Competence model seems to systematically lead to better entrepreneurial outcomes in students. In fact, compared to the other two pedagogical approaches studied (Supply and Supply-Demand), the Demand-Competence approach showed significantly higher average values for both entrepreneurial intentions and subjective norms and perceived behavioral control. The benefits derived from EE (inspiration, learning and resources benefit) also have significantly higher average values. This confirms suggestions in the literature on EE that action-oriented courses may be more effective than theoretical courses (Neck and Greene, 2011) and preferred by prospective/aspiring entrepreneurs (Nabi et al., 2017). Examining the pedagogical methods and approaches of EE allows us to distinguish the role of the learner (more active versus passive) and to evaluate how this role impacts on learning success (Pittaway et al., 2011). Some scholars (e.g., Gartner and Vesper, 1994; Nabi et al. 2017) have advanced the idea that action-oriented education is more effective than more reflective forms of education.

Although all pedagogical approaches can be relevant in promoting entrepreneurship, it has been frequently stated (but as far as we know still little or not at all) that they differ in their relative effects (Nabi et al., 2017). With the support of the literature, we can argue that active approaches prove to be more effective in better meeting the learning needs of future/aspiring entrepreneurs. Cope (2005) notes that entrepreneurs are typically action-oriented and that most of what they learn is based on experience. Entrepreneurship courses/programmes that emphasise action- and practice-oriented teaching methods and pedagogical approaches can therefore better match the learning style of potential entrepreneurs. Wee (2004) suggests emphasizing problem-solving learning in courses, as this provides more effective and authentic learning situations than entrepreneurship. Neck and Greene (2011) also emphasize practice-based pedagogies, which require students to apply and take hands-on action. In addition, active pedagogical approaches promote optimal learning as they require a high degree of personal participation from the student. In conclusion, Fiet (2000, p. 108) noted that "to the extent that a teacher is the initiator of knowledge transfer, students tend to practice less and acquire fewer competencies. This occurs because it is the teacher who is the most engaged, not the students, which is the reverse of what is optimal". Accordingly, our results confirm that students who are more likely and incentivized to act actively (through discussions and simulations of new business creation) are more inclined to develop better entrepreneurial attitudes and intentions.

Research limitations. Sampling strategy and geographical limitation cannot enable us to generalize our results to other samples characterized by different cultural and institutional contexts.

Implications. *The study contributes to both the TPB and Entrepreneurship Education research domains. First, our research confirmed the robustness of the TPB in explaining and predicting entrepreneurial intentions in young Italian students. Extending the original theoretical model, our research has also verified that the TPB can be used effectively to measure the impact and effectiveness of EE courses. Although many studies have examined the effect of EE on entrepreneurial intentions, often they have not explored the mediation processes in the education-intentions relationship. In so doing, our study has advanced empirical research in this direction, testing the mediating role of entrepreneurial attitudes, subjective norm and perceived behavioural control in the relationship between the elements of EE and students' EI.*

Second it disentangles which elements related to the educational program are most important in determining entrepreneurial intentions, and, from that point on, to propose which contents and which pedagogical methods can increase these elements more effectively. Given the importance of identifying which educational contents can be integrated into entrepreneurship courses in order to be more effective in fostering students' entrepreneurial attitudes, propensities and skills, our study sought to distinguish the effect of four different benefits derived from entrepreneurship courses, related to the topics of learning, the inspiration derived from certain elements included within the program and the resources made available in the courses and used by the students.

Third, the study also advanced the literature on EE by focusing on different pedagogical models and approaches and their different contribution to entrepreneurial outcomes (Nabi et al., 2017). This represented a real advance for the field of study, as to date there is little research that has tested different models and pedagogical frameworks with respect to impact measures.

As for the practical implications, the results of our research suggest that educational institutions and governments should implement EE programmes, with a clear vision towards improving the motivation to start new businesses and paying particular attention to both the content of the courses and the pedagogical patterns in which they are offered and delivered to students. Our research is a useful tool as it deepens knowledge about the importance of EE with respect to the characteristics of aspiring entrepreneurs, such as their perceptions of attitudinal, behavioral and normative beliefs. In this way, the study has the potential to provide educators and policy makers with suggestions to become more effective and efficient in organizing targeted and appropriate interventions, to achieve a higher rate of entrepreneurship and a large pool of aspiring entrepreneurs in the future. The results of our study also provide educators with clear indications as to which factors are most important in stimulating students' entrepreneurial attitudes and propensities within academic curricula. In this way, the study provides a guide-orientation that can support educators in the development of entrepreneurship courses/programs, in order to build classes in which to contribute to making educational projects more effective and adequate, as well as to promote a true entrepreneurial culture.

Moreover, although knowledge, learning and the availability of resources within a course have proven to be relevant and functional components to increase entrepreneurial outcomes in students, another fundamental element, and often underestimated, is the emotional component related to the theme of inspiration. From our results it has been seen that the inspiration derived from particular trigger-elements within the course is a strong and significant antecedent of intentions, entrepreneurial attitudes, perceived behavioral control and subjective norms. For example, among the various trigger-components, our results showed that inspiration is often aroused by the vision of a professor, or by the perspective of an entrepreneur who intervened during the course, and also by participation in entrepreneurial projects to simulate the start-up of a new business. For this reason, when planning and designing entrepreneurship programs, educators should focus on implementing some of these aspects. The teacher is a central element, and should base his work not only on the transmission of knowledge, but also on the ways through which to be able to arouse a change "in the hearts and minds" of the students. And since inspiration has been found to be a key component in the development of entrepreneurial attitudes and intentions, we also suggest that universities that want to assess the effectiveness of their programs should capture not only how much their students learn about entrepreneurship or whether they are satisfied with the courses, but also whether they have been inspired by the program.

Originality of the paper. *In the study conducted by Nabi et al. (2017), comparative studies linking pedagogical methods of EE in higher education to a wide range of impact measures using the theoretical framework are very limited, as is the comparative analysis of different teaching approaches (e.g. supply vs competence; Lange et al., 2014; Walter and Dohse, 2012; Wang and Verzat, 2011). Nabi et al. (2017) therefore encourage future research to compare different types of impact within different pedagogical frameworks, pointing out that it is the only constructive way to advance knowledge in the domain of EE compared to impact assessment analysis. We believe that such a comparative approach offers great opportunities to explore a range of theoretically, practically and empirically significant research questions that can help to explain and interpret contradictory results on the impact of EE programmes and thus increase the generalizability of the results. For example, which pedagogical models work for which types of impact and in which contexts? To answer this important research question, we attempted in this study to isolate the impact of EE on students' entrepreneurial attitudes and intentions disentangling different types of pedagogical intervention.*

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Unravelling the dominant product-related marketing factors shaping the choice of healthy products: an examination through the SOR model

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Abstract. *The rising rates of adult obesity in Italy underscore the urgent need for effective policy measures to promote healthier dietary habits. This study investigates how product-focused marketing elements influence consumer attitudes toward healthy food products and purchasing decisions, using the Stimulus-Organism-Response model. Findings from the analysis indicate that packaging, price insensitivity, and nutrition labels significantly influence attitudes toward healthy foods. However, the influence of brand on consumer attitudes toward healthy food was found to be negligible. These insights offer valuable guidance to manufacturers and distributors, enabling them to refine their approaches and steer consumers toward healthier dietary options effectively.*

Keywords: *Healthy food; purchase intention; SOR model*

Framing of the research. *Food policymakers and institutions are facing an obesity crisis. In Europe, at least 53% of adults are overweight with BMIs of 25+ (Eurostat, 2024). Within Italy, the rates of adult obesity have seen a concerning rise from 9% in 2003 to 11% in 2017. Although Italy's adult obesity rates remain below the EU average of 15%, a noteworthy statistic unveils that nearly one in five 15-year-olds in Italy (18%) were either overweight or obese in the period of 2013-2014, a figure aligning closely with the EU average (OECD, 2019). Overweight individuals face increased rates of certain diseases, which include respiratory problems, cardiovascular-related diseases, diabetes, and some types of cancer, among others (WHO, 2021). A healthy diet and habits (e.g., regular physical activity) are determining factors in the prevention of obesity and its related non-communicable diseases (De-Magistris et al., 2017).*

Since global problems require global responses, healthy eating is, indeed, one of the objectives of the Agenda 2030. The Sustainable Development Goals 2 of this Agenda focuses on improving eating habits through better access to healthy eating and nutritious food as a formula for health improvement (Iazzi et al., 2022). Therefore, food industry players are attempting to improve food quality, and policymakers drafted specific guidelines to provide relevant food-related information (Wang et al., 2019). In addition, in recent years, healthy food consciousness has been on the rise among young adults at the global level (Nguyen et al., 2020) and the topic of healthy food and healthy lifestyle is gaining the attention of consumers.

Food purchase and consumption behaviour has a complex nature and depends on several factors (Delormier et al., 2009). To craft effective policy tools and strategies aimed at promoting healthy eating, it is imperative to delve into the underlying motivations driving food choices. There is an increasing understanding that “healthy eating” is a polyhedric concept, which not only relates to nutritional guidelines but also to the various definitions that consumers may associate with healthy food consumption (Delormier et al., 2009). Scholarly discourse highlights the variation in personal values and levels of commitment to healthy eating, resulting in diverse interpretations of what constitutes 'healthy eating' (Hansen et al., 2018).

Moreover, prior research has investigated how healthy eating is related to consumers' mental and emotional states, as well as demographic, psychographic, behavioural, environmental, and situational factors (e.g., Hill et al., 2018; French et al., 2012; Khare and Inman, 2006). Several studies have also focused on exploring factors influencing individual food choice and, although works from different research fields (e.g., psychology, social science, nutrition, marketing, etc.) offer evidence with different perspectives, the factors affecting food choices can be levelled into three main categories. (a) Food-related features: intrinsic (colour and aroma) and extrinsic (packaging, information, and brand) features (Wang et al., 2019). (b) Individual difference: biological (appetite and taste), physical (cooking skills and time), psychological (mood and stress), cognitive (attitudes, beliefs, and knowledge), and social (family, conformism)

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factors (Shepherd and Raats, 2006). (c) Society-related features: culture, economic variables (price and income), and policy (Rayner and Lang, 2015).

In recent years, “food environment” has been defined and recognised as an additional category and an important factor influencing people’s food choices. Castro et al. (2018) concentrated on factors influencing choice in food retail environments such as shelf display and product factors (e.g. branding, packaging and nutrition labelling), pricing and price promotion factors, in-store and customer decision-making factors, and store environment factors. Focusing on food labels, literature has shown that compared with nutrition labels with quantitative information on nutrient content, several studies have reported greater effectiveness for labels using graphics and symbols, adjective labels and labels with minimal numerical content (Lee et al., 2009; Drichoutis and Lazaridis, 2017). Regarding the role of packaging, research indicates that the impact of packaging persuasiveness and design on the food experience is contingent upon various consumer characteristics and intrapersonal factors (Aday and Yener, 2014; Küster et al., 2019). Furthermore, packaging serves as a focal point for consumers, capturing their attention and shaping their perceptions of different food products. These perceptions play a significant role in influencing consumers' purchasing decisions (Aday and Yener, 2014; Scarpi et al., 2019).

Furthermore, the literature offers robust evidence underscoring the pivotal role of attitudes in shaping consumers' purchase intentions and behaviours (Friese et al., 2008). Indeed, empirical studies demonstrate that shifts in attitudes precipitate corresponding changes in food choices. Consequently, given the positive correlation between attitudes and choices, enhancing the favourability of attitudes toward food products emerges as a potent strategy for nudging behaviours towards more healthful food consumption (Demartini et al., 2019). Companies can influence consumers' decisions to purchase food through marketing techniques such as promotional tactics and communication strategies on packaging (Beacom et al., 2022).

Purpose of the paper. The primary purpose of this research is to explore how product-centric marketing elements influence attitudes toward healthy food products, and subsequent purchase intentions, by adopting the Stimulus-Organism-Response (SOR) model (Mehrabian and Russell, 1974) to our data. The study endeavours to answer the subsequent research question:

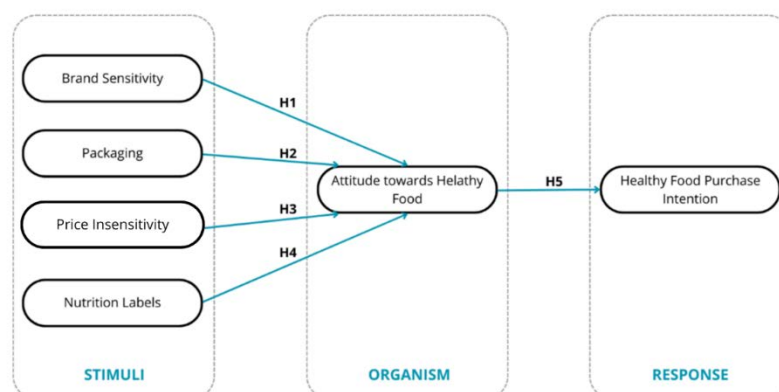
RQ: Which product-related aspects of marketing (brand, packaging, price, nutrition label) have the greatest impact on attitudes towards healthy products and, consequently, on purchase intention?

Specifically, the following hypotheses are proposed:

- H1: Brand sensitivity has a positive effect on attitude towards healthy food.
- H2: Packaging has a positive effect on attitude towards healthy food.
- H3: Price insensitivity has a positive effect on attitude towards healthy food.
- H4: Attention to nutrition labels has a positive effect on attitude towards healthy food.
- H5: Attitude towards healthy food has a positive effect on healthy food purchase intention.

Methodology. A conceptual model has been developed based on the SOR model, proposed by Mehrabian and Russell (1974), as well as on the previous literature in the area of food choice behaviour. The SOR model was proposed in the field of environmental psychology and consists of three factors: stimulus, organism, and response. According to the model, stimuli are all those aspects of the environment that play a stimulating role (S), affecting people’s internal states (O), which drives their behavioural response (R) (Mehrabian and Russell, 1974). The SOR model was chosen for the current study for two main reasons. First, the model has been extensively used in previous consumer behavioural studies (Luqma et al., 2014; Li and Yuan, 2018). Wang et al. (2011) explored the online store features as stimuli, their effects on consumers’ internal states, and their subsequent impact on consumers’ behavioural responses. Second, given the critical roles of environmental cues in influencing consumers’ behaviours, the SOR model provides a parsimonious and structured manner by which to examine the effects of product-related marketing stimuli on consumers’ cognitive or emotional responses and, in turn, their intention to healthy food purchasing behaviour. Figure 1 shows our adapted SOR model with the investigated variables, and the related relationships.

Fig. 1: Proposed conceptual model



To answer the formulated research question, a quantitative approach was adopted through the use of a structured questionnaire developed based on previously validated scales in the marketing literature. We considered four product-related marketing levers as stimuli: brand, packaging, price, and nutrition label. The attitude towards healthy food has been defined as organism. Finally, the intention to buy healthy food products has been added as response. Each construct has been measured using a seven-point item Likert scale ranging from strongly disagree to strongly agree. Table 1 illustrates the items for each questionnaire scale variable.

The survey was submitted to a sample of 1000 respondents responsible for food purchasing which are representative of the Italian population (Istat) by gender and geographical area. The questionnaire consisted of two different sections. The first one contained questions about the socio-demographic characteristics of the sample (e.g., gender, age, geographical area, area of residence, and educational level), while the second one contained the items of the investigated variables.

The analysis was conducted using SmartPLS4.1 software to examine the relationship between the dimensions investigated. The software applies structural equation modeling (SEM) to explore the linear relationship between the variables and test the overall model, and partial least squares (PLS) to perform the calculation test. Partial least squares structural equation model (PLS-SEM) has been extensively used in various fields in recent years, including international management, strategic management, and marketing (Sugiarto et al., 2022) for testing theoretical frameworks besides measuring the hypothesized relationships in structural models (Channa et al., 2020). Furthermore, PLS-SEM is a method for SEM that is based on estimations of the statistical models' causal predictions (Rigdon, 2014). The data were examined in two stages. First, the measurement model analysis was carried out by evaluating internal consistency, convergent validity, and discriminant validity. Second, the structural model analysis was performed using 5000 bootstrap resamples to analyze the significance of the variables and confidence intervals to determine whether the causal relationships between the constructs hold.

Results. There was a total of 1000 respondents participating in this research. Participants were selected to have a balanced sample in terms of the geographical area of origin among the 5 Italian regional areas: north-west (27%), north-east (19%), centre (20%), south (22.5%), and islands (11.3%) and gender (48 % male and 52 % female). Based on their age, the average age of the sample was found to be 48.47 years old. Specifically, most of the respondents were over 55 years old (303 respondents or 30.3%), followed by those who were 45-55 years old (278 respondents or 27.8%), 35-44 years old (212 respondents or 21.2%), 25-34 years old (169 respondents or 16.9%), and 18-24 years old (38 respondents or 3.8%). Regarding the area of residence, 34.1% of the respondents live in cities/large towns (> 100,000 inhabitants), 24.6% in medium-sized towns (40,000 - 100,000 inhabitants) and 41.3% in small towns (< 40,000 inhabitants). With regard to the level of education, the majority have a high school diploma (49.2%), followed by those with a degree of 5 years or more (23%), those with a degree of 3 years (13.2%), those with a lower secondary school diploma (7.8%), those with a doctorate/master's/postgraduate degree (6.7%) and those with only a primary school diploma (0.1%).

Measurement model evaluation

In general, confirmatory factor analysis (CFA) can be used to assess the validity and reliability of unobserved latent variables (Hair et al., 2020). The Cronbach's α , factor loadings, composite reliability (CR), rho_a, average variance extracted (AVE), and discriminant validity values were evaluated following Hair et al. (2022). According to Table 1, the factor loading calculated for each dimension ranged from 0.821 to 0.974, which was more than 0.5, in line with the level recommended by Hair et al. (2022); the Cronbach's α values, the CR and rho_a were all greater than the standard of 0.7 suggested by Hair et al. (2022), assessing the good internal consistency of the model. The AVE values of each dimension were greater than the recommended value of 0.5 (Hair et al., 2022), indicating that all the constructs of the study had good convergent validity.

Tab. 1: Overview of the measurements for reliability test

Dimensions	Item	Factor Loadings	Cronbach's α	Rho_a	CR	AVE	Sources of Adoption
Attitude towards Healthy Food	Eating healthy food is negative/positive	0.821	0.876	0.880	0.915	0.730	(Armitage and Conner, 1999)
	Eating healthy food is worthless/worthwhile	0.836					
	Eating healthy food is unfavorable/favorable	0.902					
	Eating healthy food is bad/good	0.855					
Brand Sensitivity	When I buy healthy food, I look at the brand	0.871	0.847	0.874	0.897	0.687	(Kapferer and Laurent, 1992)
	When I buy healthy food, I take the brand into account	0.875					
	When I buy healthy food, I prefer buying well-known brands	0.843					
Healthy Food Purchase Intention	If the store I am shopping in doesn't offer the specific brand of healthy food I am looking for, I prefer to wait	0.716	0.943	0.944	0.972	0.946	(Grewal et al., 1998)
	In the future, I intend to buy healthy food	0.974					
	The next time I go shopping I will buy healthy food	0.971					

Attention towards Nutrition Label	<i>I am interested in reading nutrition labels of healthy food</i>	0.933	0.948	0.949	0.963	0.866	(Flores-Villalba et al., 2019)
	<i>Information conveyed by nutrition labels are important for me when I shop for healthy food</i>	0.928					
	<i>I check the nutrition label of healthy product I buy more often</i>	0.926					
	<i>It is important for me to obtain information from nutrition labels when I shop healthy food</i>	0.936					
Influence of Packaging	<i>Buying healthy food with extravagant packaging makes me feel good about myself</i>	0.891	0.878	0.919	0.924	0.802	(Bloch et al., 2003)
	<i>When I see healthy food packaging that is really well-designed, I have a strong desire to buy it</i>	0.921					
	<i>A healthy food's packaging design (e.g. shape, dimension, color, pictures) can be a source of satisfaction for me</i>	0.873					
Price Insensitivity	<i>I am willing to pay more for healthy food even when a cheaper but not healthy alternative is available</i>	0.884	0.916	0.921	0.940	0.798	(Sudbury-Riley and Kohlbacher, 2016)
	<i>In general, I choose healthy food even if they cost more than others</i>	0.921					
	<i>I make every effort to purchase healthy products</i>	0.862					
	<i>No matter their cost, I buy healthy products whenever possible</i>	0.905					

To examine the difference between the latent constructs in this research and measure their discriminant validity, the Fornell-Larcker (Fornell and Larcker, 1981) test and the Heterotrait-Monotrait ratio of correlations (HTMT) were adopted, following Henseler et al. (2015). The correlation coefficient between two different constructs in the Fornell-Larcker test should be less than the square root of the AVE by a construct (Hair et al., 2022). Table 2 shows that in this study, the square root of the AVE of each variable is greater than the correlation coefficient between every two variables, in accordance with the criteria defined by Hair et al. 2022.

Tab. 2: Discriminant validity (Fornell - Larcker)

	Attitude towards Healthy Food	Brand	Healthy Food Purchase Intention	Nutrition Label	Packaging	Price Insensitivity
<i>Attitude towards Healthy Food</i>	0.854					
<i>Brand</i>	0.218	0.829				
<i>Healthy Food Purchase Intention</i>	0.515	0.410	0.973			
<i>Nutrition Label</i>	0.360	0.403	0.592	0.931		
<i>Packaging</i>	0.226	0.585	0.401	0.346	0.895	
<i>Price Insensitivity</i>	0.310	0.547	0.671	0.553	0.493	0.893

Furthermore, the HTMT proposed by Henseler et al. (2015) was used as it is considered the most stringent measure and highly recommended for the PLS-SEM analysis. The HTMT values in this study shown in Table 3 are less than the level of 0.85 suggested by Hensler et al. (2015), assuring a good discriminant validity among the latent variable of the research.

Tab. 3: Discriminant validity (HTMT)

	Attitude towards Healthy Food	Brand	Healthy Food Purchase Intention	Nutrition Label	Packaging	Price Insensitivity
<i>Attitude towards Healthy Food</i>						
<i>Brand</i>	0.246					
<i>Healthy Food Purchase Intention</i>	0.565	0.454				
<i>Nutrition Label</i>	0.394	0.441	0.626			
<i>Packaging</i>	0.249	0.685	0.434	0.377		
<i>Price Insensitivity</i>	0.343	0.624	0.719	0.592	0.545	

Structural model analysis

The analysis results of the measurement model demonstrated good reliability and validity. In order to obtain the path coefficient and analyze the significance of the structural model a structural model analysis was conducted through bootstrapping. The path coefficients, significance, and confidence interval are shown in Table 4.

Tab. 4: Coefficients for the structural model

Path	β	Standard Deviation	t-statistics	p-values	Lower (5%)	Upper (95%)
Brand \rightarrow Attitude towards Healthy Food	-0.001	0.039	0.021	0.491	-0.065	0.061
Packaging \rightarrow Attitude towards Healthy Food	0.072	0.036	1.985**	0.024	0.012	0.130
Price Insensitivity \rightarrow Attitude towards Healthy Food	0.130	0.040	3.255**	0.001	0.063	0.195
Nutrition Label \rightarrow Attitude towards Healthy Food	0.265	0.037	7.107***	0.000	0.198	0.321
Attitude towards Healthy Food \rightarrow Healthy Food Purchase Intention	0.515	0.030	17.327***	0.000	0.463	0.562

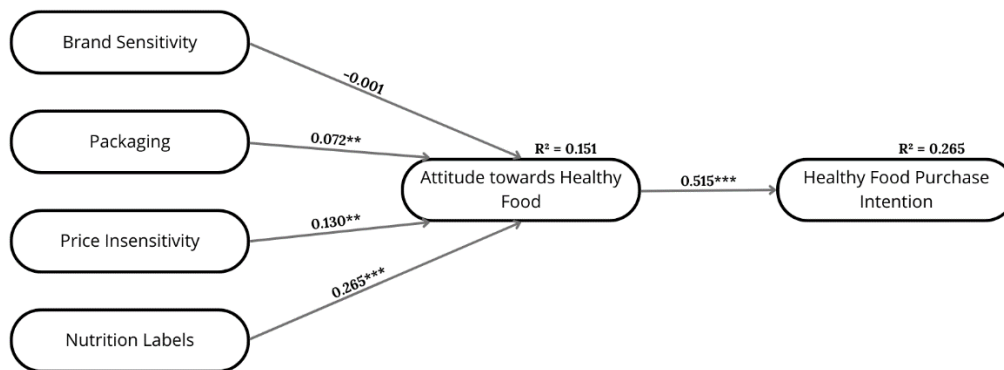
Note: ** p < 0.05, *** p < 0.001

In this study, five research hypotheses were examined. The results related to the first hypothesis (H1) point out that the brand sensitivity of consumers does not affect the attitude towards healthy food ($\beta = -0.001$; $t = 0.021$; $p = 0.491$). Conversely, the results of the second hypothesis (H2) show that the influence of packaging has a positive and significant effect on the attitude towards healthy food ($\beta = 0.072$; $t = 1.985$; $p = 0.024$). The results of the third hypothesis (H3) indicate that price insensitivity has a positive and significant impact on attitude towards healthy food ($\beta = 0.13$; $t = 3.255$; $p = 0.001$). Furthermore, for the fourth hypothesis (H4) the results show that attention to nutrition labels has an important positive and significant effect on attitude towards healthy food ($\beta = 0.265$; $t = 7.107$; $p = 0.000$). Finally, the last hypothesis (H5) was supported as the results evidence a significant influence of consumers' attitude towards healthy food on healthy food purchase intention ($\beta = 0.515$; $t = 17.327$; $p = 0.000$).

The coefficient of determination R-square is a measure of the predictive accuracy of the model and indicates the proportion of variance in the dependent variables that is explained by one or more predictor variables (Channa et al., 2020). The findings show that the R-square of attitude is 0.151, which indicates that 15.1% of the change of that construct is explained by the influence of packaging, price insensitivity, and the attention to nutrition label. The R-square of the healthy food purchase intention is 0.265, which indicates that 26.5% of this variable is determined by the attitude towards healthy food (Figure 2).

The results emerging from the analysis conducted reveal that most of the product-related marketing aspects investigated have effect on the attitude towards healthy food. In particular, consumers who pay more attention to packaging and nutrition labels of healthy food products, as well as consumers who are more insensitive to price of healthy products have a more positive attitude towards healthy food and as a consequence, a higher purchase intention. Brand, on the other hand, has been shown to be unable to influence consumer attitudes towards healthy food.

Fig. 2: Results



Research limitations. This study is not without limitations. Indeed, it is part of a wider research that is still ongoing and investigates not only product-related marketing aspects as stimuli in the model. The literature shows how many other variables related to individual consumer differences (e.g. psychological and social) have an impact on food choices (Hill et al., 2018). Therefore, the next step intends to extend the model to include psychographic and socio-demographic variables with the aim of analyzing their impact, also with respect to marketing variables. Furthermore, there is an interest in conducting multi-group analyses based on variables such as sensitivity to healthy eating, dietary habits, and lifestyle choices, to deepen our understanding of the nuanced dynamics at play.

Managerial implications. This paper delves into the intricate dynamics surrounding product-related marketing factors in shaping consumer attitudes and subsequent intentions to purchase healthy food items. Within this framework, packaging and nutrition labels emerge as pivotal levers capable of significantly influencing both attitude formation and purchasing intentions. Interestingly, while price and brand hold importance in consumer decision-making processes, they appear to take a secondary role when it comes to healthy product selections. This research provides a significant contribution to manufacturers and distributors, furnishing insights crucial for refining their strategies aimed at steering

consumer choices toward healthier dietary options. By aligning with the growing demand for products that prioritise individual health and well-being, stakeholders can better meet the changing preferences and needs of consumers.

The significant positive effects of packaging and attention to nutrition labels on consumers' attitudes towards healthy food underscore the importance of investing in attractive and informative packaging designs and clear nutrition labels. Managers should prioritize packaging that communicates health benefits and appeals to consumer preferences while ensuring that nutrition labels are easy to understand and prominently displayed. In addition, policymakers could implement regulations requiring clearer and more standardized nutrition labels on food products, accompanied by public awareness campaigns to educate consumers on how to interpret these labels effectively.

Originality of the paper. This study contributes valuable insights to the existing body of literature concerning healthy food decision-making. Its particular emphasis lies in exploring the impact of product-related marketing elements as stimuli on attitudes toward healthy food and subsequent purchase intentions, employing the well-established SOR model. Furthermore, the study benefits from a substantial and balanced sample of respondents, ensuring both adequacy and representativeness in terms of gender distribution and geographical representation, thereby enhancing the reliability and generalizability of the findings.

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Exploring humane orientation: the impact of employees' sustainability adoption on firm performance

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Abstract

Humane Entrepreneurial Orientation (HEO) is the focal dimension of Humane Entrepreneurship (HumEnt) built on entrepreneurial orientation (EO), sustainability orientation (SO), and humane resource orientation (HRO). Although EO is well studied in entrepreneurship field, the direct relationship between sustainability management and firm performance has been investigated with contrasting results and, most important, little is known about the underlying mechanisms that increase the engagement of organization into sustainability actions and initiatives. In particular an under investigated area of research concerns the role of employees' perceptions about the firms' orientation toward sustainability. In addition, the link between HEO and firm performance needs to be explored paying attention to the mechanism through which it is pursued.

Under the theoretical lens of HumEnt, which emphasizes prioritizing people, the environment, and society alongside profits, and of the Organizational Support Theory sustaining that firm-specific output can be influenced by the support employees perceive from organization, the aim of the paper is to analyse how the level of SO and HRO as perceived from employees, influence firm financial performance exploring the role of employees' sustainability adoption. Based on a sample of mechanical firms' employees, operating in Campania region, a regression analysis has been performed. Results of our study show that: 1) the perception by employees of a strong humane orientation of firms as conceptualized in the context of Humane Entrepreneurship, results in a higher level of sustainability adoption by the organization itself; 2) in turn, the higher level of sustainability adoption results in a better financial performance of firms. Our study has implications for both theory and managerial practices. It advances theory by providing new insights about the underlying mechanism that drive better performance through sustainability adoption highlighting the role of employees perception about the humane orientation of the firm. Moreover, it practically offers suggestions to managers and entrepreneurs in order to enhance firm performance through sustainability adoption.

Key words: *Humane Entrepreneurship; Sustainability; Firm performance; Employees' perception; regression.*

Framing of the research. *The Humane Entrepreneurship (HumEnt) theory has been recently proposed has a new perspective on how to address global challenges and to respond to the imperative posed by the United Nations 2030 Agenda on Sustainable Development. This emerging framework is in fact an expression of the increasing interest that sustainability issues have received in the last years. HumEnt addresses new forms of entrepreneurial strategic posture (Parente and Kim, 2021; Parente et al., 2018; Parente et al., 2021; Kim, El Tarabishy and Bae, 2018; Vesce et al., 2023), which is based on entrepreneurial orientation theory (Covin and Lumpkin, 2011; Covin and Slevin, 1989, 1991) and integrates the environmental, social, and human-resource attention. Based on the EO theory, corporate social responsibility (CSR) theory, and servant leadership theory (SLT), HumEnt has been proposed as a new framework able to better address the even more relevant challenges of social and environmental sustainability that characterize modern organizational contexts (Dyllick & Hockerts, 2002).*

In its epistemology, Kim et al. (2018) proposed a model that emphasizes the need to integrate EO within a specific human-centered logic (Kim et al., 2021), while Parente et al. (2018) propose a second model of HumEnt by further adding social and environmental sustainability. In a further development of its core conceptualization, Parente et al. (2018,

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2021) defined the Humane Entrepreneurial Orientation (HEO) dimension as an expanded entrepreneurial strategic posture that represents “the extent to which entrepreneurs and top managers are inclined to take care of a firm's competitiveness, to take care of their human resources and to take care of relevant social values and concerns, including those regarding environmental sustainability” (Parente et al., 2021, p. 4).

HEO reflects the firm's overall competitive orientation and is a concept concerning the firm level. In fact HEO is conceptualized as a strategic construct whose conceptual domain includes firm-level outcomes and management-related preferences, beliefs, and behaviors as expressed among a firm's top-level managers.

Several studies have investigated the relationship between sustainability and environmental actions and firm performance (Rodgers et al., 2019; Sardana et al., 2020; Wiengarten et al., 2017; Wong et al., 2020). However, contrasting findings resulted in the relation between sustainability practices and the overall performances of organizations (Harvey et al., 2017; Luo and Bhattacharya, 2006), suggesting the necessity for further investigation of the topic. Furthermore, less is known about the mechanisms through which it is possible to develop a high level of engagement in sustainability initiatives and through which organization tends to adopt a higher levels of environmental sustainability practices and policies that could results in better financial performance. Based on these premises we focus on the role of employees whose importance in sustainability initiatives is often overlooked, despite the recognition of their crucial importance in the implementation of policies and actions for sustainability (Shen & Zhang, 2019; Lee et al., 2014; Yuan et al., 2020).

Purpose of the paper. The paper aims to investigate how the level of humane orientation of firms impacts on sustainability adoption and in turn the latter influences firm financial performance. More specifically our paper aims to analyse: 1) the link between employees' perceptions about humane orientation of firms and the level of sustainability adoption by the organization itself; 2) how a high level of sustainability adoptions results in a better performance of firm from a financial point of view.

In exploring the mechanisms through which organization tends to adopt a higher levels of environmental sustainability practices and policies, it has been highlighted that top management's beliefs in environmental sustainability will influence the future trends of the environmental practices to be implemented within the organization.

More specifically, according to the Organizational Support Theory (Eisenberger et al., 1986; Rhoades and Eisenberger, 2002) it has been showed that a specific firm-output can be influences by the support employees perceive from the organization. The theory sustains that beliefs of employees about the extent to which the organization supports their well-being (Eisenberger et al. 1986) create a reference context within which individuals adjust their own behavior accordingly firms' behavior. Following a logic of reciprocity the theory suggests that employees who perceive that their organization supports and take care of them, feel morally obliged to contribute to the organization (Dulac et al. 2008). In this context we can say that perception of a humane oriented firms, that is a firm taking care of its employees, stimulate employees to adopt behaviors that are more aligned with their organization.

In the same direction, the creation of an organizational environment supportive of sustainability can help employees to develop sustainable behaviors and actions.

More specifically what emerges from the research on the topic is that if the employees perceive a supportive environment in terms of sustainability they respond with positive behaviors that are beneficial to the organization in terms of sustainability adoption (Hossin et al., 2021; Shanock and Eisenberger, 2006).

Following this theory, the orientations and beliefs expressed by top management and entrepreneurs, as expression of firm's orientation, represent a sort of signal that influences the lower-level managers and employees toward better sustainability actions (Yuan et al., 2020).

In other terms, what emerges is that when employees perceive strong top management beliefs about sustainability initiatives, lower-level managers and employees are more likely to adopt the programs and recognize the benefits from these programs. In other terms, the employees' perceptions about top management beliefs and strategic orientation of firm toward sustainability impacts the level of sustainability adoption by the organization itself. In contrast, when employees perceive a limited commitment of top management regarding environmental sustainability, they may choose not to implement sustainability programs reducing sustainability adoption. Hence, we can say that a stronger employees' perceptions about top management's belief in environmental sustainability, support greater adoption of environmental practices.

Following this logic, we can propose the following research hypothesis concerning the employee's perception about humane orientation representing the extent to which a firm is oriented towards sustainability and people involved in the firm:

Hp1: Employees' perception of Humane Orientation positively impacts the level of adoption of environmental sustainability initiatives (Sustainability adoption).

The relationship between sustainability adoption and financial performance has received increasing attention in the last years. However, a consensus has not been reached and mixed results have been obtained (Alshehh et al., 2018; Santis et al. 2016; Charlo et al., 2015, Marti et al., 2015). Some previous studies showed a negative relationship between sustainability practices and financial performance (Lopez, 2007; Branco and Rodrigues, 2008; Lee et al., 2009). There are also studies which reported a neutral relationship (Statman, 2006; Galema et al., 2008; Garcia-Castro et al., 2010; Surroca, 2010) showing no significant difference in the financial performance of companies with different level of sustainability practices (Oberndorfer et al., 2013).

More recently, sustainability research has achieved advances by identifying a positive relationship between sustainability management and firm performance (Rodgers et al., 2019; Sardana et al., 2020; Wiengarten et al., 2017; Wong et al., 2020). In this context, it has been showed that “Good” environmental performance may results in “good” financial performance (Feng et al., 2018; Konar & Cohen, 20018). In the same direction, Ameer and Othman (2012) suggested that the companies with higher levels of sustainability practices have higher financial performance than those who do not engage in such practices. More specifically, studies on the topic highlighted that environmental sustainability practices can increase financial performance in different ways: reducing costs, adding value for the end users (Goyal et al., 2013), or serving as a marketing function that supports premium pricing. Furthermore, when consumers perceive the value of environmental sustainability actions implemented by the firm, the demand for green products will increase (Chen, 2001; Jackson et al., 2016; Noori & Chen, 2003) and this could results in higher financial performance. However, the need for a deeper understanding of this relationship suggests for further investigation of the topic. So, we can propose the following hypothesis.

Hp 2: The level of sustainability adoption positively impacts financial performance of firm.

Methodology. To examine the hypotheses of this study, we conducted a survey among employees of mechanical firms situated in the Province of Naples, Campania Region, Italy. An internet based structured questionnaire was administered to a convenience sample, ensuring respondents' anonymity by not requesting their names.

HEO is composed of three dimensions, namely EO, SO, and HRO. Vesci et al. (in press) classifying humane entrepreneurial oriented identified as “humane oriented firms” those firms with high levels of SO and HRO and low levels of EO. Thus, being the aim of this study to explore only the humane dimension and the mechanism through which it influences firm performance, we do not explore EO dimension, focusing on humane orientation of firm only. Along this vein, humane orientation has been assessed with six items adapted from Le (2022). Participants were asked to rate their perceptions about current effort of firms in developing humane orientation (HO) using a 5-point Likert scale. To assess the factorial structure of the HO measure, a principal component analysis (PCA) with Varimax rotation was performed. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (0.90) and the Bartlett test ($p=.000$) provide assurance that the scale is homogenous and adequate. This is also confirmed by Kaiser’s criteria (unidimensional measurement scale) and the explained total variance (70.20%).

Sustainability adoption has been assessed with three items adapted by Gopalakrishna-Remani et al. (2022) and Liang et al., (2007). Participants were asked to rate on a 5-point Likert scale their perception about the level of implementation of sustainability actions.

To obtain a measure for financial performance we adopted 3 items respectively capturing how employees agree (on a scale ranging from 1=do not agree to 5=very much agree) in the following statement about firm financial performance: (1) growth of level of profit; (2) growth of Market share; (3) growth of clients’ number. The KMO measure of sampling adequacy (0.71) and the Bartlett test ($p=.000$) provide assurance that the scale is homogenous and adequate. This is also confirmed by Kaiser’s criteria and the explained total variance (80.60%).

Finally, the empirical analysis also considers a group of control variables that possibly could impact employees’ commitment toward sustainability, namely age, education level and the role of the employee inside the firm.

To test the research hypotheses ordinary least squares (OLS) regression analysis was conducted and variance inflation factors (VIF) were calculated to assess multicollinearity among independent variables.

Results. The findings of the paper provide new evidences about the relationship between the adoption of sustainable practices and actions and financial performance of firms and, most important, provide some new insights about the mechanisms that increase the engagement of organization into sustainability actions and initiatives and translate environmental sustainability initiatives into better firm financial performance.

In light with some previous studies (Rodgers et al., 2019; Sardana et al., 2020; Wiengarten et al., 2017; Wong et al., 2020) our findings display the positive relationship between sustainable adoption and financial performance showing that a higher level of sustainability adoption increases financial performance of firms. In more general term, the results of our paper support that firm financial performance can be improved through a higher level of sustainability adoption.

Our results confirms the first hypothesis too, showing the impact of perceived HO by employees on the level of sustainability adoption in organizations. Our study suggests that when employees perceive that firm has high level of HO, the level of sustainability adoption increases. More clearly, findings suggest that, when employees exhibit a positive perception of HO in their organization, the organization is more likely to engage in sustainability initiatives and therefore tends to adopt a higher levels of environmental sustainability practices and policies. Employees’ perception of humane orientation of firms positively influences sustainability adoption, signifying that a strategic orientation by organization in pursuing green and social goals fosters greater employee commitment. In other terms, what seems to emerges from the analysis is an interplay between individual and organizational level. The perception of a more humane oriented firms encourage people involved in the firms to adopt sustainable practices stimulating the creation of a virtuous cycle in which firm level and individual level interact in order to stimulate sustainable organizations and more humane oriented.

Research limitations. This research is subject to certain limitations. The study focuses on firms within a specific regional context, limiting the generalizability of findings to other regions with different legislative, regulatory, and cultural landscapes. Future research endeavors could broaden the scope by including diverse geographical contexts.

Managerial implications. Building on the theoretical lens of Humane Entrepreneurship this study makes several theoretical contributions to the literature on environmental sustainability related to the relationship with financial performance and the underlying mechanisms aimed to stimulate sustainable organizations.

A first theoretical contribution is related to the findings that emphasize the importance of adopting a higher level of sustainability practices to increase financial performance of firm. Without employing a higher level of practices and standards in environmental sustainability, it would be hard to achieve financial firm performance.

A second theoretical contribution is related to the mechanisms that increase the engagement of organization into sustainability actions and initiatives showing the interplay between individual and organizational level, demonstrated by the interaction between perception of humane orientation (that is originally a firm level dimension) and sustainability adoption (that explore how individual are engaged in sustainability practices).

From a practical point of view the most obvious managerial implication from this study is simply stated: managers, as expression of strategic orientation of firm, need to “talk the talk” and “walk the walk” with respect to the adoption of environmental sustainability initiatives. In other terms, our research underscores the importance of firms adopting best practices to encourage behaviors of employees consistent with sustainability.

Originality of the paper. This study suggests a novel approach for understanding the effects of top management's decision-making on the level of sustainability adoption. Specifically, we emphasize that top management's visible support and participation is critical in achieving a higher level of environmental initiatives and transforming them into better financial performance. Thus, we argue that a greater perception of employees about the Humane orientation of organizations enhances sustainability adoption and a greater sustainability adoption increase financial performance.

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Unravelling the dominant product-related marketing factors shaping the choice of healthy products: an examination through the SOR model

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Abstract. *The rising rates of adult obesity in Italy underscore the urgent need for effective policy measures to promote healthier dietary habits. This study investigates how product-focused marketing elements influence consumer attitudes toward healthy food products and purchasing decisions, using the Stimulus-Organism-Response model. Findings from the analysis indicate that packaging, price insensitivity, and nutrition labels significantly influence attitudes toward healthy foods. However, the influence of brand on consumer attitudes toward healthy food was found to be negligible. These insights offer valuable guidance to manufacturers and distributors, enabling them to refine their approaches and steer consumers toward healthier dietary options effectively.*

Keywords: *Healthy food; purchase intention; SOR model*

Framing of the research. *Food policymakers and institutions are facing an obesity crisis. In Europe, at least 53% of adults are overweight with BMIs of 25+ (Eurostat, 2024). Within Italy, the rates of adult obesity have seen a concerning rise from 9% in 2003 to 11% in 2017. Although Italy's adult obesity rates remain below the EU average of 15%, a noteworthy statistic unveils that nearly one in five 15-year-olds in Italy (18%) were either overweight or obese in the period of 2013-2014, a figure aligning closely with the EU average (OECD, 2019). Overweight individuals face increased rates of certain diseases, which include respiratory problems, cardiovascular-related diseases, diabetes, and some types of cancer, among others (WHO, 2021). A healthy diet and habits (e.g., regular physical activity) are determining factors in the prevention of obesity and its related non-communicable diseases (De-Magistris et al., 2017).*

Since global problems require global responses, healthy eating is, indeed, one of the objectives of the Agenda 2030. The Sustainable Development Goals 2 of this Agenda focuses on improving eating habits through better access to healthy eating and nutritious food as a formula for health improvement (Iazzi et al., 2022). Therefore, food industry players are attempting to improve food quality, and policymakers drafted specific guidelines to provide relevant food-related information (Wang et al., 2019). In addition, in recent years, healthy food consciousness has been on the rise among young adults at the global level (Nguyen et al., 2020) and the topic of healthy food and healthy lifestyle is gaining the attention of consumers.

Food purchase and consumption behaviour has a complex nature and depends on several factors (Delormier et al., 2009). To craft effective policy tools and strategies aimed at promoting healthy eating, it is imperative to delve into the underlying motivations driving food choices. There is an increasing understanding that “healthy eating” is a polyhedric concept, which not only relates to nutritional guidelines but also to the various definitions that consumers may associate with healthy food consumption (Delormier et al., 2009). Scholarly discourse highlights the variation in personal values and levels of commitment to healthy eating, resulting in diverse interpretations of what constitutes 'healthy eating' (Hansen et al., 2018).

Moreover, prior research has investigated how healthy eating is related to consumers' mental and emotional states, as well as demographic, psychographic, behavioural, environmental, and situational factors (e.g., Hill et al., 2018; French et al., 2012; Khare and Inman, 2006). Several studies have also focused on exploring factors influencing individual food choice and, although works from different research fields (e.g., psychology, social science, nutrition, marketing, etc.) offer evidence with different perspectives, the factors affecting food choices can be levelled into three main categories. (a) Food-related features: intrinsic (colour and aroma) and extrinsic (packaging, information, and brand) features (Wang et al., 2019). (b) Individual difference: biological (appetite and taste), physical (cooking skills and time), psychological (mood and stress), cognitive (attitudes, beliefs, and knowledge), and social (family, conformism)

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factors (Shepherd and Raats, 2006). (c) Society-related features: culture, economic variables (price and income), and policy (Rayner and Lang, 2015).

In recent years, “food environment” has been defined and recognised as an additional category and an important factor influencing people’s food choices. Castro et al. (2018) concentrated on factors influencing choice in food retail environments such as shelf display and product factors (e.g. branding, packaging and nutrition labelling), pricing and price promotion factors, in-store and customer decision-making factors, and store environment factors. Focusing on food labels, literature has shown that compared with nutrition labels with quantitative information on nutrient content, several studies have reported greater effectiveness for labels using graphics and symbols, adjective labels and labels with minimal numerical content (Lee et al., 2009; Drichoutis and Lazaridis, 2017). Regarding the role of packaging, research indicates that the impact of packaging persuasiveness and design on the food experience is contingent upon various consumer characteristics and intrapersonal factors (Aday and Yener, 2014; Küster et al., 2019). Furthermore, packaging serves as a focal point for consumers, capturing their attention and shaping their perceptions of different food products. These perceptions play a significant role in influencing consumers' purchasing decisions (Aday and Yener, 2014; Scarpi et al., 2019).

Furthermore, the literature offers robust evidence underscoring the pivotal role of attitudes in shaping consumers' purchase intentions and behaviours (Friese et al., 2008). Indeed, empirical studies demonstrate that shifts in attitudes precipitate corresponding changes in food choices. Consequently, given the positive correlation between attitudes and choices, enhancing the favourability of attitudes toward food products emerges as a potent strategy for nudging behaviours towards more healthful food consumption (Demartini et al., 2019). Companies can influence consumers' decisions to purchase food through marketing techniques such as promotional tactics and communication strategies on packaging (Beacom et al., 2022).

Purpose of the paper. The primary purpose of this research is to explore how product-centric marketing elements influence attitudes toward healthy food products, and subsequent purchase intentions, by adopting the Stimulus-Organism-Response (SOR) model (Mehrabian and Russell, 1974) to our data. The study endeavours to answer the subsequent research question:

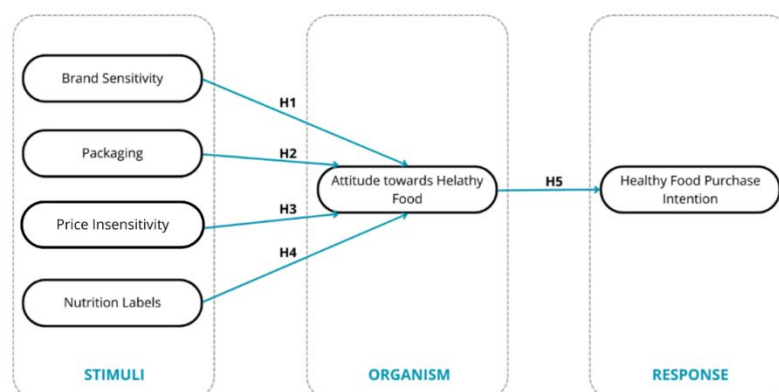
RQ: Which product-related aspects of marketing (brand, packaging, price, nutrition label) have the greatest impact on attitudes towards healthy products and, consequently, on purchase intention?

Specifically, the following hypotheses are proposed:

- H1: Brand sensitivity has a positive effect on attitude towards healthy food.
- H2: Packaging has a positive effect on attitude towards healthy food.
- H3: Price insensitivity has a positive effect on attitude towards healthy food.
- H4: Attention to nutrition labels has a positive effect on attitude towards healthy food.
- H5: Attitude towards healthy food has a positive effect on healthy food purchase intention.

Methodology. A conceptual model has been developed based on the SOR model, proposed by Mehrabian and Russell (1974), as well as on the previous literature in the area of food choice behaviour. The SOR model was proposed in the field of environmental psychology and consists of three factors: stimulus, organism, and response. According to the model, stimuli are all those aspects of the environment that play a stimulating role (S), affecting people’s internal states (O), which drives their behavioural response (R) (Mehrabian and Russell, 1974). The SOR model was chosen for the current study for two main reasons. First, the model has been extensively used in previous consumer behavioural studies (Luqma et al., 2014; Li and Yuan, 2018). Wang et al. (2011) explored the online store features as stimuli, their effects on consumers’ internal states, and their subsequent impact on consumers’ behavioural responses. Second, given the critical roles of environmental cues in influencing consumers’ behaviours, the SOR model provides a parsimonious and structured manner by which to examine the effects of product-related marketing stimuli on consumers’ cognitive or emotional responses and, in turn, their intention to healthy food purchasing behaviour. Figure 1 shows our adapted SOR model with the investigated variables, and the related relationships.

Fig. 1: Proposed conceptual model



To answer the formulated research question, a quantitative approach was adopted through the use of a structured questionnaire developed based on previously validated scales in the marketing literature. We considered four product-related marketing levers as stimuli: brand, packaging, price, and nutrition label. The attitude towards healthy food has been defined as organism. Finally, the intention to buy healthy food products has been added as response. Each construct has been measured using a seven-point item Likert scale ranging from strongly disagree to strongly agree. Table 1 illustrates the items for each questionnaire scale variable.

The survey was submitted to a sample of 1000 respondents responsible for food purchasing which are representative of the Italian population (Istat) by gender and geographical area. The questionnaire consisted of two different sections. The first one contained questions about the socio-demographic characteristics of the sample (e.g., gender, age, geographical area, area of residence, and educational level), while the second one contained the items of the investigated variables.

The analysis was conducted using SmartPLS4.1 software to examine the relationship between the dimensions investigated. The software applies structural equation modeling (SEM) to explore the linear relationship between the variables and test the overall model, and partial least squares (PLS) to perform the calculation test. Partial least squares structural equation model (PLS-SEM) has been extensively used in various fields in recent years, including international management, strategic management, and marketing (Sugiarto et al., 2022) for testing theoretical frameworks besides measuring the hypothesized relationships in structural models (Channa et al., 2020). Furthermore, PLS-SEM is a method for SEM that is based on estimations of the statistical models' causal predictions (Rigdon, 2014). The data were examined in two stages. First, the measurement model analysis was carried out by evaluating internal consistency, convergent validity, and discriminant validity. Second, the structural model analysis was performed using 5000 bootstrap resamples to analyze the significance of the variables and confidence intervals to determine whether the causal relationships between the constructs hold.

Results. There was a total of 1000 respondents participating in this research. Participants were selected to have a balanced sample in terms of the geographical area of origin among the 5 Italian regional areas: north-west (27%), north-east (19%), centre (20%), south (22.5%), and islands (11.3%) and gender (48 % male and 52 % female). Based on their age, the average age of the sample was found to be 48.47 years old. Specifically, most of the respondents were over 55 years old (303 respondents or 30.3%), followed by those who were 45-55 years old (278 respondents or 27.8%), 35-44 years old (212 respondents or 21.2%), 25-34 years old (169 respondents or 16.9%), and 18-24 years old (38 respondents or 3.8%). Regarding the area of residence, 34.1% of the respondents live in cities/large towns (> 100,000 inhabitants), 24.6% in medium-sized towns (40,000 - 100,000 inhabitants) and 41.3% in small towns (< 40,000 inhabitants). With regard to the level of education, the majority have a high school diploma (49.2%), followed by those with a degree of 5 years or more (23%), those with a degree of 3 years (13.2%), those with a lower secondary school diploma (7.8%), those with a doctorate/master's/postgraduate degree (6.7%) and those with only a primary school diploma (0.1%).

Measurement model evaluation

In general, confirmatory factor analysis (CFA) can be used to assess the validity and reliability of unobserved latent variables (Hair et al., 2020). The Cronbach's α , factor loadings, composite reliability (CR), rho_a, average variance extracted (AVE), and discriminant validity values were evaluated following Hair et al. (2022). According to Table 1, the factor loading calculated for each dimension ranged from 0.821 to 0.974, which was more than 0.5, in line with the level recommended by Hair et al. (2022); the Cronbach's α values, the CR and rho_a were all greater than the standard of 0.7 suggested by Hair et al. (2022), assessing the good internal consistency of the model. The AVE values of each dimension were greater than the recommended value of 0.5 (Hair et al., 2022), indicating that all the constructs of the study had good convergent validity.

Tab. 1: Overview of the measurements for reliability test

Dimensions	Item	Factor Loadings	Cronbach's α	Rho_a	CR	AVE	Sources of Adoption
Attitude towards Healthy Food	Eating healthy food is negative/positive	0.821	0.876	0.880	0.915	0.730	(Armitage and Conner, 1999)
	Eating healthy food is worthless/worthwhile	0.836					
	Eating healthy food is unfavorable/favorable	0.902					
	Eating healthy food is bad/good	0.855					
Brand Sensitivity	When I buy healthy food, I look at the brand	0.871	0.847	0.874	0.897	0.687	(Kapferer and Laurent, 1992)
	When I buy healthy food, I take the brand into account	0.875					
	When I buy healthy food, I prefer buying well-known brands	0.843					
	If the store I am shopping in doesn't offer the specific brand of healthy food I am looking for, I prefer to wait	0.716					
Healthy Food Purchase Intention	In the future, I intend to buy healthy food	0.974	0.943	0.944	0.972	0.946	(Grewal et al., 1998)
	The next time I go shopping I will buy healthy food	0.971					

Attention towards Nutrition Label	<i>I am interested in reading nutrition labels of healthy food</i>	0.933	0.948	0.949	0.963	0.866	(Flores-Villalba et al., 2019)
	<i>Information conveyed by nutrition labels are important for me when I shop for healthy food</i>	0.928					
	<i>I check the nutrition label of healthy product I buy more often</i>	0.926					
	<i>It is important for me to obtain information from nutrition labels when I shop healthy food</i>	0.936					
Influence of Packaging	<i>Buying healthy food with extravagant packaging makes me feel good about myself</i>	0.891	0.878	0.919	0.924	0.802	(Bloch et al., 2003)
	<i>When I see healthy food packaging that is really well-designed, I have a strong desire to buy it</i>	0.921					
	<i>A healthy food's packaging design (e.g. shape, dimension, color, pictures) can be a source of satisfaction for me</i>	0.873					
Price Insensitivity	<i>I am willing to pay more for healthy food even when a cheaper but not healthy alternative is available</i>	0.884	0.916	0.921	0.940	0.798	(Sudbury-Riley and Kohlbacher, 2016)
	<i>In general, I choose healthy food even if they cost more than others</i>	0.921					
	<i>I make every effort to purchase healthy products</i>	0.862					
	<i>No matter their cost, I buy healthy products whenever possible</i>	0.905					

To examine the difference between the latent constructs in this research and measure their discriminant validity, the Fornell-Larcker (Fornell and Larcker, 1981) test and the Heterotrait-Monotrait ratio of correlations (HTMT) were adopted, following Henseler et al. (2015). The correlation coefficient between two different constructs in the Fornell-Larcker test should be less than the square root of the AVE by a construct (Hair et al., 2022). Table 2 shows that in this study, the square root of the AVE of each variable is greater than the correlation coefficient between every two variables, in accordance with the criteria defined by Hair et al. 2022.

Tab. 2: Discriminant validity (Fornell - Larcker)

	Attitude towards Healthy Food	Brand	Healthy Food Purchase Intention	Nutrition Label	Packaging	Price Insensitivity
<i>Attitude towards Healthy Food</i>	0.854					
<i>Brand</i>	0.218	0.829				
<i>Healthy Food Purchase Intention</i>	0.515	0.410	0.973			
<i>Nutrition Label</i>	0.360	0.403	0.592	0.931		
<i>Packaging</i>	0.226	0.585	0.401	0.346	0.895	
<i>Price Insensitivity</i>	0.310	0.547	0.671	0.553	0.493	0.893

Furthermore, the HTMT proposed by Henseler et al. (2015) was used as it is considered the most stringent measure and highly recommended for the PLS-SEM analysis. The HTMT values in this study shown in Table 3 are less than the level of 0.85 suggested by Hensler et al. (2015), assuring a good discriminant validity among the latent variable of the research.

Tab. 3: Discriminant validity (HTMT)

	Attitude towards Healthy Food	Brand	Healthy Food Purchase Intention	Nutrition Label	Packaging	Price Insensitivity
<i>Attitude towards Healthy Food</i>						
<i>Brand</i>	0.246					
<i>Healthy Food Purchase Intention</i>	0.565	0.454				
<i>Nutrition Label</i>	0.394	0.441	0.626			
<i>Packaging</i>	0.249	0.685	0.434	0.377		
<i>Price Insensitivity</i>	0.343	0.624	0.719	0.592	0.545	

Structural model analysis

The analysis results of the measurement model demonstrated good reliability and validity. In order to obtain the path coefficient and analyze the significance of the structural model a structural model analysis was conducted through bootstrapping. The path coefficients, significance, and confidence interval are shown in Table 4.

Tab. 4: Coefficients for the structural model

Path	β	Standard Deviation	t-statistics	p-values	Lower (5%)	Upper (95%)
Brand → Attitude towards Healthy Food	-0.001	0.039	0.021	0.491	-0.065	0.061
Packaging → Attitude towards Healthy Food	0.072	0.036	1.985**	0.024	0.012	0.130
Price Insensitivity → Attitude towards Healthy Food	0.130	0.040	3.255**	0.001	0.063	0.195
Nutrition Label → Attitude towards Healthy Food	0.265	0.037	7.107***	0.000	0.198	0.321
Attitude towards Healthy Food → Healthy Food Purchase Intention	0.515	0.030	17.327***	0.000	0.463	0.562

Note: ** p < 0.05, *** p < 0.001

In this study, five research hypotheses were examined. The results related to the first hypothesis (H1) point out that the brand sensitivity of consumers does not affect the attitude towards healthy food ($\beta = -0.001$; $t = 0.021$; $p = 0.491$). Conversely, the results of the second hypothesis (H2) show that the influence of packaging has a positive and significant effect on the attitude towards healthy food ($\beta = 0.072$; $t = 1.985$; $p = 0.024$). The results of the third hypothesis (H3) indicate that price insensitivity has a positive and significant impact on attitude towards healthy food ($\beta = 0.13$; $t = 3.255$; $p = 0.001$). Furthermore, for the fourth hypothesis (H4) the results show that attention to nutrition labels has an important positive and significant effect on attitude towards healthy food ($\beta = 0.265$; $t = 7.107$; $p = 0.000$). Finally, the last hypothesis (H5) was supported as the results evidence a significant influence of consumers' attitude towards healthy food on healthy food purchase intention ($\beta = 0.515$; $t = 17.327$; $p = 0.000$).

The coefficient of determination R-square is a measure of the predictive accuracy of the model and indicates the proportion of variance in the dependent variables that is explained by one or more predictor variables (Channa et al., 2020). The findings show that the R-square of attitude is 0.151, which indicates that 15.1% of the change of that construct is explained by the influence of packaging, price insensitivity, and the attention to nutrition label. The R-square of the healthy food purchase intention is 0.265, which indicates that 26.5% of this variable is determined by the attitude towards healthy food (Figure 2).

The results emerging from the analysis conducted reveal that most of the product-related marketing aspects investigated have effect on the attitude towards healthy food. In particular, consumers who pay more attention to packaging and nutrition labels of healthy food products, as well as consumers who are more insensitive to price of healthy products have a more positive attitude towards healthy food and as a consequence, a higher purchase intention. Brand, on the other hand, has been shown to be unable to influence consumer attitudes towards healthy food.

Fig. 2: Results



Research limitations. This study is not without limitations. Indeed, it is part of a wider research that is still ongoing and investigates not only product-related marketing aspects as stimuli in the model. The literature shows how many other variables related to individual consumer differences (e.g. psychological and social) have an impact on food choices (Hill et al., 2018). Therefore, the next step intends to extend the model to include psychographic and socio-demographic variables with the aim of analyzing their impact, also with respect to marketing variables. Furthermore, there is an interest in conducting multi-group analyses based on variables such as sensitivity to healthy eating, dietary habits, and lifestyle choices, to deepen our understanding of the nuanced dynamics at play.

Managerial implications. This paper delves into the intricate dynamics surrounding product-related marketing factors in shaping consumer attitudes and subsequent intentions to purchase healthy food items. Within this framework, packaging and nutrition labels emerge as pivotal levers capable of significantly influencing both attitude formation and purchasing intentions. Interestingly, while price and brand hold importance in consumer decision-making processes, they appear to take a secondary role when it comes to healthy product selections. This research provides a significant contribution to manufacturers and distributors, furnishing insights crucial for refining their strategies aimed at steering

consumer choices toward healthier dietary options. By aligning with the growing demand for products that prioritise individual health and well-being, stakeholders can better meet the changing preferences and needs of consumers.

The significant positive effects of packaging and attention to nutrition labels on consumers' attitudes towards healthy food underscore the importance of investing in attractive and informative packaging designs and clear nutrition labels. Managers should prioritize packaging that communicates health benefits and appeals to consumer preferences while ensuring that nutrition labels are easy to understand and prominently displayed. In addition, policymakers could implement regulations requiring clearer and more standardized nutrition labels on food products, accompanied by public awareness campaigns to educate consumers on how to interpret these labels effectively.

Originality of the paper. This study contributes valuable insights to the existing body of literature concerning healthy food decision-making. Its particular emphasis lies in exploring the impact of product-related marketing elements as stimuli on attitudes toward healthy food and subsequent purchase intentions, employing the well-established SOR model. Furthermore, the study benefits from a substantial and balanced sample of respondents, ensuring both adequacy and representativeness in terms of gender distribution and geographical representation, thereby enhancing the reliability and generalizability of the findings.

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