2.2024

Special Issue

Management Control

Rivista Accreditata AIDEA

FrancoAngeli

Special Issue 2.2024

Management Control

FrancoAngeli

Management Control

Editorial Office: Alessandra Goti, Department of Economics and Management, University of Pisa, Via C. Ridolfi, 10 – 56124 Pisa. Phone: +39.050-2216.345, email: rivistaMC@ec.unipi.it.

Subscription Services and Journal Customer Service: Viale Monza 106 - 20127 Milano - Tel. +39.02.28.37.141; fax +39.02.26.14.19.58; e-mail: riviste@francoangeli.it.

Subscription fees: Please check on our website for subscription fees (http://www.francoangeli.it). Otherwise, you can send an e-mail (riviste@francoangeli.it) or a fax (+39.02-26141958) to our Journal Customer Service, indicating clearly the name of the Journal. You can pay the subscription by credit card or by bank transfer. *The subscription will begin as soon as payment of the year's subscription rate is confirmed*.
Authorized by Tribunale di Milano n. 668 del 21.12.2010 – Four-monthly – Direttore responsabile: Stefano Angeli - Poste Italiane Spa - Sped. in Abb. Post. - D.L. 353/2003 (conv. in L. 27/02/2004 n. 46), art. 1, comma 1, DCB Milano – This issue contains less than 45% of advertisement - – Printed by Global Print srl – via degli Abeti 17/1, Gorgonzola (Mi).

Supplement to Second Quarter – Printed in October 2024.

Sommario
Management Control
SU 2/2024

Performance measurement systems in an era of complexity, uncertainty and grand challenges

Gianluca Vitale[*]

Abstract

The current uncertain and emergency environment is challenging business management like never before. Companies are called to face many complex and wicked problems affecting society on a global scale. Climate change, global pandemics, social inequalities, war conflicts, digital transformation, and energy supply shortages are only a few of the critical issues companies must deal with daily. Performance measurement systems and management control practices can have a key role in addressing such a turbulent environment. Accordingly, the literature has recently started investigating their role in supporting companies facing societal "Grand Challenges". The scientific debate on this topic is intense but still in its infancy leaving open wide research areas that need to be further explored and investigated. The articles included in this volume fuel the ongoing debate by analysing the role of performance measurement systems and management control tools in several contexts and under uncertain and emergency conditions.

Keywords: Performance measurement systems; Sustainability, Digitalization, Societal Grand Challenges

1. Introduction

Over the past ten years, the world has experienced many global challenges, including climate change, global pandemics, social inequalities, war conflicts, shortage of energy supply, food security, hunger, and not only, affecting society on a large scale (e.g., Benschop, 2021; Grimes and Vogus, 2021; Gümüsay et al., 2022; Reinecke, 2018). This emergency scenario (Opitz and Tellmann, 2015) has called for prompt actions and decision-

[*] University of Siena, Department of Business and Law. E-mail: gianluca.vitale@unisi.it.

Doi: 10.3280/MACO2024-002-S1001

making from businesses and organizations in the present to foster a better future (Beckert, 2021).

To date, however, companies still struggle to provide a concrete contribution to addressing these challenges (e.g., Dyllick and Muff, 2016; Van Zanten and Van Tulder, 2021). For example, in the sustainability field, there is still a great decoupling between companies' sustainability practices and the progress made in reaching sustainable development at a global level (Van Zanten and Van Tulder, 2021). According to the UN SDSN World SDG Dashboard 2024, only 16% of the SDG targets are on track to be met globally by 2030, with the remaining 84% showing limited progress or a reversal of progress.

The variety of themes and actors that characterize the “grand challenges” of the present and the near future, make the context in which companies operate more complex and uncertain than ever (e.g., Ferraro et al., 2015). This complexity is even accentuated if we consider that some of the great themes companies must face may conflict with each other, generating tensions and paradoxes (Haffar & Searcy, 2017).

For example, digitalization and the rise of Artificial Intelligence solutions represent a great opportunity for business management. Nonetheless, such technological innovations require an ever-increasing electricity consumption, producing significant environmental impacts (e.g., Cupertino & Vitale, 2024). Even being sustainable can have negative implications from a business perspective. Sustainability, in fact, can be costly for companies that, to improve their environmental and social impacts, may have to sustain significant costs that can reduce short-term profitability (Cupertino et al., 2022). Those mentioned are just some of the possible tensions between the different management issues, but many others could be made. The core of the reasoning is that today the complexity of business management does not lie in the multitude of issues to be addressed but in the fact that those issues can conflict, generating tensions.

This renewed complexity of the reference context and the strong uncertainties that currently affect business management implies that accounting and performance measurement tools may not be as effective as they should be (e.g., Gomes et al., 2023; Micheli and Muctor, 2021; Nudurupati et al., 2021). Therefore, under the current emergency scenario, traditional approaches to performance measurement may not be able to ensure proper trustworthiness (Norreklit and Cinquini, 2024). Consequently, we should question the role of performance measurement systems in the modern environment and how they should be redesigned to fit the new corporate challenges better.

In this regard, scholars and practitioners should wonder: in the heterogeneity of issues to be addressed and in the extreme complexity of the surrounding environment, what is the right business path to take? What should a company's priorities be? What performance aspects should take the lead? In case of conflicts between these aspects, how to manage the relative tensions? Performance measurement systems can assume a new and key role by supporting managers in facing these issues.

Considering all the above, the literature recently started to investigate the role of performance measurement systems in complex and emergency contexts as well as under operational uncertainties and future unknowability (e.g., Beckert, 2021; Mitchell et al., 2021; Leoni et al., 2021; Otley, 2012; Rikhardsson et al., 2021). In so doing, the literature evolved in many streams that, without claiming to be exhaustive, will be briefly reported in the next lines.

A first and large body of literature focused on the grand challenges related to sustainability as the latter is widely considered one of the most urgent concerns to face (e.g., Doh et al., 2019; Reinecke and Ansari, 2016). From this point of view, some authors have emphasized the current limits to sustainability measurement and reporting, pushing towards the development of new accounting solutions useful to improve corporate impacts on the environment and society (e.g., Adams and Abhayawansa, 2022; Bebbington and Unerman, 2020; Quattrone, 2021). In the wake of this line of thinking and relying on corporate sustainability conflicts and paradoxes, other scholars underlined the need to formulate new accounting solutions aimed at detecting and revealing the possible tensions that arise from the multifaceted nature of sustainability challenges (e.g., Jørgensen et al., 2022). This can help managers to identify the best trade-offs (Haffar and Searcy, 2017; Hann et al., 2010) and properly manage the tensions arising from the several business aspects and challenges.

Another fervent topic currently drawing scholars' attention regards the role of new digital advancements, such as Big Data and Artificial Intelligence, in affecting business performance measurement systems (e.g., Fähndrich, 2023; Visani et al., 2024). On this topic, several scholars have highlighted how recent technological advances can strengthen performance measurement practices (e.g., Korsen and Ingvaldsen, 2022) making them more objective, effective and efficient (Visani et al., 2024) while minimizing information deficits (e.g., Fähndrich, 2023). In this line of research, however, some scholars conversely emphasize the possible negative effects of the progressive digitalisation of performance measurement practices. The more advanced the technology becomes, the more complex it is to use, and this could reduce the ability and propensity to measure performance (Chenhall & Moers, 2015). Furthermore, the digitalization of measurement and control practices can lead managers never to question the data provided by the machine and this can undermine the maieutic function of accounting systems, leading managers to make wrong decisions faster (Quattrone, 2016). Indeed, information trustworthiness, data reliability and algorithm processing represent some of the most important problems affecting recent technological innovations that need to be solved so that digitalisation can concretely support accounting and performance measurement systems (e.g., Janssen et al., 2020; Vitale, 2023). Accordingly, the challenge for future research is understanding how and to what extent performance measurement practices can be digitalised (or delegated to Artificial Intelligence), minimising negative side effects and addressing the ever-increasing technology complexity.

Moving to another stream of literature, many scholars have focused on how accounting and performance measurement tools can support companies in dealing with emergencies or unexpected situations (e.g., Ahrens and Ferry, 2021; Mitchell et al., 2021). This area of research has been particularly enriched in recent years due to the global COVID-19 pandemic. Indeed, most of the articles belonging to this research area focused on how measurement practices and accounting tools supported companies and governments in facing the emergency caused by COVID-19 (e.g., Ahrens and Ferry, 2021; Leoni et al., 2021; Mitchell et al., 2021). In particular, during the pandemic period, measurement and accounting practices allowed governments to keep a low death rate (Mithell et al., 2021) and companies to make exceptional decisions in the face of such an unexpected crisis (Leoni et al., 2021).

Lastly, another stream of literature investigated how measurement practices can support managers in dealing with future uncertainty and unknowability (Otley, 2012) by allowing them to imagine multiple future scenarios and shaping the present based on the most desirable imagined future (Beckert, 2021; Patvardhan & Ramachandran, 2020). In this perspective, performance measurement systems can have a key role in shaping reality and ensuring that corporate outcomes and performance will be as close as possible to future projections (Beckert, 2021).

In the same research area, other scholars focused on the inverse relationship, namely how environmental uncertainty affects the design of performance measurement systems (Rikhardsson et al., 2021). In this case, future uncertainty can induce companies to increase the variety of performance measures to be considered even if such an increase in variety is not linked to management satisfaction or firm performance (Rikhardsson et al., 2021).

On all the above topics, the scientific debate is fervent and ongoing. Nevertheless, despite the research efforts made so far, the debate on the role of performance measurement systems in this era of complexity, uncertainty and grand challenges is still in its infancy. Accordingly, large research areas remain still little explored and need to be further investigated. The present volume fuels the current scientific debate as the papers it includes addressed many of the above topics thus enriching the relevant research streams.

2. The volume's contents

The first article of this volume is by Vilma Kilpinen, Jean Claude Mutiganda and Matti Skoog who investigated the significance of reward systems in performance-based management control across five Finnish organizations. By blending Agency Theory (which emphasizes maximizing self-interest through financial rewards) with Self-Determination Theory (which stresses intrinsic motivation) the authors found that a well-designed reward system should combine monetary and social rewards to significantly improve employee motivation and performance. Besides, reward systems proved to be crucial management tools, but their success relies on transparency, fairness, communication, and understanding of what motivates employees at various levels.

The second paper, written by Edoardo Borlatto, Elisa Truant, Elisa Giacosa, and Luca Maria Manzi, investigates the intersection of Environmental, Social, and Governance (ESG) criteria and Performance Management Systems (PMS). The study aims to understand how businesses can integrate non-financial ESG metrics into their performance management to enhance sustainability and strategic outcomes. In so doing, the authors performed a Systematic Literature Review developing the state of the art of ESG integration within performance measurement systems. The authors conclude by emphasising the need to create a more standardized and universally acknowledged measurement framework and proposing a structured agenda for future research.

The third study of this volume is by Silvia Cantele, Silvia Valcozzena, Bettina Campedelli, Chiara de' Stefani, and Marco De Luca and examines the integration of sustainability governance and management control systems (MCS) through a detailed case study of the Italian firm "SIT".

The paper underlines the key role of corporate governance bodies (i.e., Corporate Sustainability Director, Board of Directors and Sustainability Committees) in fostering corporate sustainability. In particular, a structured sustainability governance system with well-defined roles and responsibilities ensures the effective implementation of sustainability goals. Additionally, the authors highlighted that sustainability integration into management control systems allows companies to ensure their sustainability efforts are proactive, consistent, and aligned with long-term business success.

The fourth article of this volume is that of Rosanna Spanò, Ilaria Martino, Flavio Spagnuolo, and Alessandra Allini. The paper examines the challenges organizations face in aligning their commitment to Environmental, Social, and Governance (ESG) issues, particularly focusing on the discrepancies between individual managers' perceptions and organizational culture towards ESG in Italian companies. The authors highlighted the importance of cultural alignment for effective ESG strategies and stakeholder satisfaction, while also noting the influence of individual characteristics such as age, job grade, and tenure on these discrepancies. The study suggests that addressing the above issues is crucial for enhancing ESG accountability and value creation and calls for further research to explore additional factors influencing perceived ESG discrepancies.

Riccardo Giannetti, Lino Cinquini and Andrea Dello Sbarba wrote the fifth contribution of this volume. Their paper discusses the complexities of Management Accounting Change (MAC) through the lens of Kurt Lewin's force field theory, emphasizing the dynamic interactions between various forces that influence MAC within organizations. It highlights the case study of Società Aeroporto Toscano S.p.A (SAT) from 1994 to 2007, illustrating the processes of adopting and adapting management accounting practices, particularly in budgeting systems, driven by financial control needs. The research proposes an enhanced framework for understanding MAC, validating Lewin's theory, and emphasizing the importance of longitudinal studies to capture the evolving nature of forces influencing change.

The sixth study of this volume was carried out by Federico Barnabè, Riccardo Santoni and Manuel Mechi. Their paper explores the drivers of organizational resilience in times of crisis with a specific focus on the COVID-19 period. To pursue their research aim, the authors developed a single case study analysing the Italian case of FASI (Fondo Assistenza Sanitaria Integrativa), a not-for-profit organization that operates in the healthcare assurance sector that was strongly impacted by the COVID-19 pandemic. The case study's empirical results showed that the different challenges induced by the pandemics led the company to develop three different types of resilience: reactive behaviour – bouncing-back to the previous equilibrium (type 1), adaptive behaviour – bouncing-forward to a higher level of equilibrium (type 2), and proactive behaviour – preparing for a possible future shock (type 3). In this scenario, a fundamental role is played by three categories of drivers, namely the personal top management characteristics (i.e., the human dimension), the management control systems, and the external support provided by stakeholders, knowledgeable experts and associations.

Sonia Vitali, Michele Guidi and Marco Giuliani developed the seventh contribution of this volume.

Their study aims to explore how technological, organizational, and environmental factors influence the adoption and implementation of virtual annual general meetings (AGMs) among companies, using the theoretical lens of the technology-organization-environment (TOE) framework. The research was conducted through an inductive content analysis of AGM minutes from Italian companies listed on the FTSE-MIB, considering the years 2019, 2020, 2021, and 2022. The study emphasizes a general reluctance of Italian listed companies to shift to digital meetings. Indeed, although the COVID-19 pandemic represented a compelling opportunity to foster corporate digitalisation, the adoption of virtual formats for annual shareholder meetings seems to be still limited in Italy. According to the authors, technology costs and complexities, the absence of formal organisational structures, the lack of governmental support and inadequate infrastructures represent the main factors for this reluctance.

The eighth article of this volume is that of Assunta Di Vaio. Her study explores how digitalization impacts performance management systems (PMSs) in the shipping industry, focusing on the case study of a small shipping agency in Italy. The research is grounded in stakeholder theory and focuses on how shipping intermediaries, such as agencies, adapt to digital transformations and improve their performance management through advanced digital tools. The author found that digitalization had a general positive effect on the shipping agency's PMSs, making them more efficient and better aligned with stakeholder needs. However, to fully exploit digitalization improvements, the agency must further develop its use of KPIs and invest in proper training programs.

Fabio Nappo, Federico Schimperna and Maria Schimperna are the authors of the ninth contribution of this volume. In their study, they explored the challenges faced by university spin-offs, particularly in the realm of planning and control, which are critical for their survival. The article draws on the concept of ambidextrous intellectual capital, which combines both the exploitation of current capabilities and the exploration of new opportunities. From an empirical standpoint, the authors conducted a survey of senior experts from university spin-offs to understand their awareness of management tools and to what extent they use them to balance short- and long-term goals. The research emphasizes that although there is awareness of the importance of ambidextrous planning and control systems, their application is limited. Accordingly, the authors proposed a framework that offers a structured approach to address the challenges faced by university spin-offs, potentially reducing their high failure rates.

The last paper of the volume is that of Nadia Ardito, Natalia Aversano, Diana Ferullo and Paolo Tartaglia Polcini. In their paper, the authors examined how board gender diversity influences the financial and non-financial performance of Italian public healthcare organizations (HCOs) during the COVID-19 pandemic. In so doing, they used an OLS regression model to assess the effect of gender diversity in top governance positions (General Manager, CEO, and Chief Health Officer) on both financial and non-financial performance. Data were collected from 150 Italian public HCOs, covering financial reports and governance structures from 2021, during the height of the pandemic. Lastly, the authors relied on Resource Dependence Theory (RDT), which posits that organizations depend on external resources, and gender diversity on boards enhances access to these resources by fostering diverse perspectives and decision-making capabilities. The study shows that the presence of women in leadership positions positively contributes to the financial health of healthcare organizations, especially in times of crisis like the pandemic. However, this gender diversity does not impact non-financial aspects like staff development, which may require different strategies to address during emergencies.

References

Adams C.A., Abhayawansa S. (2022), Connecting the COVID-19 pandemic, environmental, social and governance (ESG) investing and calls for 'harmonisation' of sustainability reporting, *Critical Perspectives on Accounting*, 82, 102309.

Ahrens T., Ferry L. (2021), Accounting and accountability practices in times of crisis: a Foucauldian perspective on the UK government's response to COVID-19 for England. *Accounting, Auditing & Accountability Journal*, 34(6), pp. 1332-1344.

Bebbington J., Unerman J. (2020). Advancing research into accounting and the UN Sustainable Development Goals, *Accounting, Auditing & Accountability Journal*, 33(7), pp. 1657-1670.

Beckert J. (2021), The firm as an engine of imagination: Organizational prospection and the making of economic futures, *Organization Theory*, 2(2).

Benschop Y. (2021), Grand challenges, feminist answers, *Organization Theory*, 2(3).
Chenhall R.H., Moers F. (2015), The role of innovation in the evolution of management accounting and its integration into management control, *Accounting, Organizations and Society*, 47(3), pp. 1-13.
Cupertino S., Vitale G., Ruggiero P. (2022), Performance and (non) mandatory disclosure: the moderating role of the Directive 2014/95/EU, *Journal of Applied Accounting Research*, 23(1), pp. 163-183.
Cupertino S., Vitale G. (2024). Exploring the nexus between corporate digitalisation and environmental sustainability: The moderating role of slack resources. *Management Control*, 1, pp. 87-108.
Doh J.P., Tashman P., Benischke M.H. (2019), Adapting to grand environmental challenges through collective entrepreneurship, *Academy of management perspectives*, 33(4), pp. 450-468.
Dyllick T., Muff K. (2016), Clarifying the meaning of sustainable business: Introducing a typology from business-as-usual to true business sustainability, *Organization & Environment*, 29(2), pp. 156-174.
Fähndrich J. (2023), A literature review on the impact of digitalisation on management control, *Journal of management control*, 34(1), pp. 9-65.
Ferraro F., Etzion D., & Gehman J. (2015), Tackling grand challenges pragmatically: Robust action revisited, *Organization Studies*, 36(3), pp. 363-390.
Gomes L.A.d.V., Hourneaux Junior F., Facin A.L.F., Leal L.F. (2023), Performance measurement and management systems for dealing with strategies in uncertain ecosystems, *International Journal of Operations & Production Management*, 43(3), pp. 543-577.
Grimes M.G., Vogus T. J. (2021), Inconceivable! Possibilistic thinking and the sociocognitive underpinnings of entrepreneurial responses to grand challenges, *Organization Theory*, 2(2).
Gümüsay A.A., Marti E., Trittin-Ulbrich H., Wickert C. (2022), How organizing matters for societal grand challenges. In *Organizing for Societal Grand Challenges*, Emerald Publishing Limited.
Haffar M., Searcy C. (2017), Classification of trade-offs encountered in the practice of corporate sustainability, *Journal of business ethics*, 140, pp. 495-522.
Hahn T., Figge F., Pinkse J., Preuss L. (2010), Trade-offs in corporate sustainability: You can't have your cake and eat it, *Business strategy and the environment*, 19(4), pp. 217-229.
Janssen M., Brous P., Estevez E., Barbosa L.S., Janowski T. (2020), Data governance: Organizing data for trustworthy Artificial Intelligence, *Government information quarterly*, 37(3).
Jørgensen S., Mjøs A., Pedersen L.J.T. (2022), Sustainability reporting and approaches to materiality: tensions and potential resolutions, *Sustainability Accounting, Management and Policy Journal*, 13(2), pp. 341-361.
Korsen E.B.H., Ingvaldsen J.A. (2022), Digitalisation and the performance measurement and management system: reinforcing empowerment, *International Journal of Productivity and Performance Management*, 71(4), pp. 1059-1075.
Leoni G., Lai A., Stacchezzini R., Steccolini I., Brammer S., Linnenluecke M., Demirag I. (2021), Accounting, management and accountability in times of crisis: lessons from the COVID-19 pandemic, *Accounting, Auditing & Accountability Journal*, 34(6), pp. 1305-1319.

Micheli P., Muctor G. (2021), The roles of performance measurement and management in the development and implementation of business ecosystem strategies, *International Journal of Operations and Production Management*, 41(11), pp. 1761-1784.
Mitchell F., Nørreklit H., Nørreklit L., Cinquini L., Koeppe F., Magnacca F., Mauro S.G., Jakobsen M., Korhonen T., Laine T. & Liboriussen J.M. (2021). Evaluating performance management of COVID-19 reality in three European countries: a pragmatic constructivist study, *Accounting, Auditing & Accountability Journal*, 34(6), pp. 1345-1361.
Norreklit H., Cinquini L. (2024), Performance measurement for a better future, *Management Control*, 1, pp. 15-38.
Nudurupati S.S., Garengo P., Bititci U.S. (2021), Impact of the changing business environment on performance measurement and management practices, *International Journal of Production Economics*, 232.
Opitz S., Tellmann U. (2015), Future emergencies: Temporal politics in law and economy. *Theory, Culture & Society*, 32(2), pp. 107-129.
Otley D. (2012), Performance management under conditions of uncertainty: some valedictory reflections. *Pacific Accounting Review*, 24(3), pp. 247-261.
Patvardhan S., Ramachandran J. (2020), Shaping the future: Strategy making as artificial evolution, *Organization Science*, 31, pp. 671-697.
Quattrone P. (2016), Management accounting goes digital: Will the move make it wiser? *Management Accounting Research*, 31, pp. 118-122.
Quattrone P. (2021), Seeking transparency makes one blind: how to rethink disclosure, account for nature and make corporations sustainable, Accounting, *Auditing & Accountability Journal*, 35(2), pp. 547-566.
Reinecke J. (2018), Social Movements and Prefigurative Organizing: Confronting Entrenched Inequalities in Occupy London, *Organization Studies*, 39(9), pp. 1299-1321.
Reinecke J., Ansari S. (2016), Taming wicked problems: The role of framing in the construction of corporate social responsibility, *Journal of Management Studies*, 53(3), pp. 299-329.
Rikhardsson P., Wendt S., Arnardóttir A.A. & Sigurjónsson T.O. (2021). Is more really better? Performance measure variety and environmental uncertainty. *International Journal of Productivity and Performance Management*, 70(6), pp. 1446-1469.
Van Zanten J.A., Van Tulder R. (2021), Improving companies' impacts on sustainable development: A nexus approach to the SDGS, *Business Strategy and the Environment*, 30(8), pp. 3703-3720.
Visani F., Raffoni A., Costa E. (2024), The quest for business value drivers: applying machine learning to performance management, *Production Planning & Control*, 35(10), pp. 1127-1147.
Vitale G. (2023), Understanding Supply Chain Digitalization Through Actor-Network Theory: The Interplay Between Blockchain, *Accounting and Management Control*, Springer Nature.

The Relevance of Rewards in Performance-Based Management Control

Vilma Kilpinen, Jean Claude Mutiganda, Matti Skoog[*]

Abstract

This study aims to increase the understanding of how employees in different organizational contexts and hierarchical levels explain and appreciate, i.e. understand, their organisation's reward systems. Two different schools of thought have dominated the debate of how to conceptualize the role of rewards in performance management and organisation psychology literature: agency theory and self-determination theory. This study combines these schools and take both monetary aspects into account in line with what is prescribed in agency theory and more non-financial aspects that self-determination consider. The study applies a case study approach based on interviews and publicly available information from five Finnish organisations. The organisations analysed operate in different sectors, have different organisational structures, and use different reward systems. From a careful investigation of the five different organisations, a cross-sectional picture emerges showing the role of reward systems in companies, and their perceived importance as management control tools. The findings show that reward transparency and fair communication are the most significant factors affecting the experience of employees towards performance-based management control system that is used to allocate rewards. Monetary rewards should also be complemented and linked with social non-financial rewards to reach the decent management control acceptance and understanding in the organisation.

Keywords: Management control, rewards, agency and self-determination

1. Introduction

Which tools does management use to implement a strategy that motivates the staff to perform better? There is an overall agreement in recent research that a reward based system has a potential to help management design,

[*] Åbo Akademi University, Finland. Corresponding author: matti.skoog@abo.fi.

Management Control (ISSN 2239-0391, ISSNe 2239-4397), 2024, 2 – Special issue
Doi: 10.3280/MACO2024-002-S1002

implement and monitor performance based control indicators (Chatzoglou et al., 2024; Ariani, 2023; Shortland and Perkins, 2023; Patel et al., 2023). Rewards can be financial and non-financial. Financial based rewards are often regarded as the most powerful tool motivating the employee to perform better, especially top managers (Shortland and Perkins, 2023; Dagher et al., 2024). However, depending on contexts, non-financial rewards, such as recognition and job security are more relevant for low and middle level employees than monetary rewards per se (Chatzoglou et al., 2024; Larsson et al., 2022). Regardless of the type of the reward system in use, leadership style and communication play an important role in explaining to the employees why and how the reward system works, and can affect them (Meirinhos et al., 2023). Organisations use rewards in a variety of ways, as a management tool to communicate the type of performance they want employees to strive for to support their strategy. Rewards can also be used to show appreciation, motivate and encourage, engage skilled and competent staff and improve the well-being at work (Malek et al., 2020). The gap in the literature is to understand the way employees perceptions and attitudes towards rewards may affect the success of a reward system that their organisations have implemented (Lee, 2024). The aim of this study is to fill this gap by analysing how employees that work in different organizations explain and appreciate their organisation's reward systems.

Empirical data came from a case-study conducted in winter 2024 in five different organisations operating in Finland. The data were based on interviews and publicly available information online. The interviewees had different hierarchical levels. The organisations analysed operate in different sectors, have different organisational structures, and use different reward systems. From a careful investigation of the five different organisations, a cross-sectional picture emerges showing the role of reward systems in companies, and their perceived importance as management control tools.

Main findings show that reward transparency and fair communication are the most significant factors affecting the experience of employees towards performance-based management control system that is used to allocate rewards. Monetary rewards should be complemented with social rewards other than simply saying "thank you"! The next section explains the theoretical approach. It is followed by research method and data, findings, and discussion. The paper ends with a conclusion.

2. Theoretical framework

2.1 Reward as a performance-based management control system

Management control literature defines the concept of reward in a similar way: rewards are seen as a management tool that contributes to the success of an organisation and encourages employees to act in line with the organisation's strategy, goals and values (Siswanto et al., 2021; Malek et al., 2020). Rewards are paid in addition to normal salaries and depend on individual employee performance. Rewards have a wide range of effects, usually aimed at improving staff availability, retention, performance, satisfaction and motivation, all of which contribute to organisational performance (Rixom and Rixom, 2023). Discussions about rewards usually focus on tangible forms of rewards, i.e. financial rewards such as salary, bonuses, shares, incentives and special rewards and benefits, which are only one aspect of rewards. They are complemented by intangible/non-monetary rewards, which have become increasingly important in recent years. They can be divided into professional rewards, which include the job itself, flexible working hours, personal development and growth opportunities, and social rewards, which include status symbols, feedback, representation in the work community and various forms of recognition (Patel et al., 2023; Shortland and Perkins, 2023).

Reward can be defined as a two-way process between the organisation and its members, with benefits for both parties. Reward is also a management tool that communicates desired performance and supports the implementation of the organisation's strategy and the achievement of goals (Zhang et al., 2022). Rewards are often equated with incentives, where the person is guided to do something by a punishment or reward. Incentives can lead people to make choices that they would not make without incentives (Siswanto et al., 2021).

2.2. Theoretical positioning

Two different schools of thought have dominated the debate of how to conceptualize the role of rewards in performance management and organisation psychology literature: agency theory and self-determination theory (Shaw, 2024). Agency theory is recognised as one of the most dominant theoretical frameworks for studying reward systems. Agency theory examines the relationship between organisational success and rewards. It differs significantly from many other motivational theories, particularly in its view of people. Agency theory assumes that individuals are opportunistic, i.e.

constantly seeking to maximise their self-interest, and emphasises that reward policies play an important role in the success of organisations (Leroy, 2024)

Agency theory is seen as the standard justification for pay for performance because it attempts to reconcile the economic interests of employees and employers. Agency theory assumes that the employer seeks to maximise effort at the lowest possible cost, while the employee seeks to maximise autonomy and minimise effort at the highest possible wage. Agency theory assumes that money is the only thing that motivates and sees the relationship between employee and employer as a contract designed to reconcile the goals of both parties. According to agency theory, the most important thing is to pay the employee for activities that lead to the employer's goals (Shaw, 2024)

Celik et al. (2023) argue that employee rewards have a significant impact on employee performance and productivity. Employees' work values were negatively affected by fixed pay. According to the study, rewards have a positive impact on employee productivity, creating an opportunity for employers to use rewards as a motivational factor towards organisational goals. Saraswat (2022) found similar results, that is, an effective reward system has a positive impact on how employees perform.

In contrast to agency theory, self-determination theorists argue that people are intrinsically and naturally motivated to perform well when their works are under appropriate settings. Hence, financial rewards are not the only factors that motivates people to work well (Leroy, 2024). Within these two opposite positions, scholars continue to analyse a combination of financial and non-financial factor explaining the way reward systems motivate employees at different organisational levels (Leroy, 2024; Shaw, 2024). Reward systems are part of the organisation's business system. The effectiveness of the system depends on how all the parts work together and how they fit with the organisation's strategy and other business systems. The key is that the processes associated with reward work well, are consistent and transparent and are consistent (Leroy, 2024).

Effective reward practices are based on an understanding of the organisation's external environment and the purpose of the chosen reward system, supported by a clear structure. The structure includes processes, i.e. day-to-day procedures for applying the scheme and consistent decisions that support its operation, as well as information about them. The effectiveness and impact of the reward system is measured by employees in the workplace. A reward system is said to be effective when the organisation is satisfied with it and it works as intended (Agrawal, 2012).

While the role of rewards as an effective management and motivational tool is widely recognised, it should be borne in mind that reward systems do not always produce the desired results in organisations. The effectiveness of rewards is based on reward knowledge, i.e. employees' understanding of what rewards are available in the organisation and how they are determined. Research shows that the stronger the reward culture, the more satisfied employees are with their pay, the fairer they perceive the pay system to be and the more likely they are to act in ways that support the success of the organisation. Like organisations, reward systems need to change over time to respond to changes in society (Zhang et al., 2022). Research also shows that the reward system should encourage actions that are in line with the organisation's strategy. Performance targets that are too easy to achieve are not motivating. Similarly, a performance target that feels unattainable can undermine motivation. In addition, it is necessary to look not only at what a reward system looks like at a particular point in time, but also at how it is set up, how it is applied, maintained and developed (Rixom and Rixom, 2023).

Previous studies have shown the shortcomings of agency theory in reward-based performance literature. Assessing the effectiveness of agency theory is difficult because it identifies money as the only motivational factor and does not consider the psychological or social aspects of motivation. It also ignores the link between individual effort and reward. The link between performance and reward in teamwork is also difficult to identify and measure (Bosse and Phillips, 2016).

In addition to traditional agency theory, models that consider agent performance and motivation have been proposed to support reward systems. These models suggest that in addition to traditional rewards, versatile and flexible performance measures and so-called weak rewards, i.e. intangible rewards in addition to salary, are needed to increase effectiveness and motivation. Stewardship theory challenges agency theory and encourages the development of a trust-based leadership model, which is considered to be particularly effective in public organisations that are looking for new ways to increase the internal task and service motivation of their employees (Torfing and Bentzen, 2020). Stewardship theory emphasises trust, autonomy and responsibility, job satisfaction and consistency alongside traditional rewards (Torfing and Bentzen, 2020).

3. Research methods and data

The case study consists of six interviews conducted in five different organisations in Finland. Each organisation represents a different industry. In conformity with explorative qualitative research method (Yin, 2013), the research team used a semi-structured, and open-ended interview guide. We design the interview questions so that they could be used to collect similar data from different persons working in different organisations. Interviews took place via Teams software. Each interview was recorded simultaneously and transcribed electronically. After the interviews, the transcription was corrected by listening to the interview again and the material was printed for the next stage of analysis.

Data analysis started with coding data, which means structuring or classifying it. Data can be coded in a data-driven, theory-driven and theory-based way (Yin, 2013). In this study, a data-driven approach to content analysis was used, where the data is allowed to 'speak' as freely as possible, and the material is coded specifically to identify what is relevant to the research questions. Coding was followed by thematization (Yin, 2013).

A theme is a broader issue, a frame of reference or a coherent theme found in the data. In this study, coding was done by reading through the transcribed material several times and underlining the responses that were most relevant to the research questions and themes. Underlining made it relatively easy to identify different perspectives, and colour coding was used to aid thematic identification. After coding, the coherent observations and interesting anomalies found in the material were grouped into coherent themes. Interesting quotations were also noted. These analysis steps also stimulated new research literature and gave rise to new perspectives. Thematization was supported by previous research literature and interview questions.

The original language of the quotations used in the results section has been edited to improve readability. Filler words and colloquialisms have been removed from the quoted material, but the content has not been changed. The language of the interview was Finnish, and the quotes were translated into English. At all stages of processing the interview material, care was taken to ensure that no interpretations were made and that the content remained the same.

It can be argued that data collection based on six interviews cannot provide enough information for a comprehensive case-study. In consequence, the study collected and analysed context data from company information available online. The online information helped to get more insights into company's strategies and management control settings with which the interviewees operated. But it did not disclose reward compensation systems applicable in each organisation.

Table 1 - Data collection statistics

Company	Interviewee	Number of employees	Business sector	Industry
F1	V1	>500	Public sector	Education Utbildning (https://www.keuda.fi)
F2	V3	>500	Business	Building and constructions Byggverksamhet (https://bet-set.fi)
F3	V2; V5	250–500	Business	Sport (https://www.unisport.com)
F4	V4	50–100	Business consulting	IT - (https://www.happeo.com)
F5	V6	<50	Business consulting	Consulting / HRM Företagstjänster (https://www.nisinterim.fi/en)

4. Findings and discussion

4.1 The role and importance of the reward system in the organisation

All the data confirmed that reward systems are an important tool motivating and engaging employees. Each reward system guides employees to act in ways that support the organisation's business. According to respondents, rewards are important. However, their effectiveness varies from company to company.

"The perception is that it plays an important role. That is a thought and an assumption. But the practical experience is that in the end it has very little impact. We try to do good, but in the end, it does not lead to much action". V2

"I would say that they (reward systems) do not play a very big role. Maybe we would like them to play a bigger role, but they are not used as much as they could be". V4

"I think the importance of the reward system depends on who you ask." V5

Respondents had differing views on the extent to which reward systems have a tangible impact on employee performance and motivation. Some described them as significant incentives, while others saw them as just one of many motivational factors.

The interviews material suggest that the role and importance of reward systems is influenced by their perceived success. At company level, there were differences in how well established and effective reward systems were.

In some companies they were part of a well-established practice, while in others they were described as incomplete and challenging.

"Our company can be described as a start-up company and therefore our way of working, even in terms of rewards, is quite unorganised". V3

Companies where the reward system was considered successful and where there was less room for improvement considered it more important. Conversely, in companies where reward processes were incomplete or undesirable, the role of rewards was perceived as less important. This finding is consistent with earlier studies according to which a successful reward system is the one that employees perceive as important and effective (Leroy, 2024; Shaw, 2024). Respondents gave further comments:

"The challenge with the reward system is that there are no appropriate performance measures for all employees and job roles in the organisation". V1

"Since all tasks in our company are the same, it is easier to create a reward system that works". V6

"We have been building a reward system for a couple of years now, and it has been particularly challenging to create the right metrics and criteria for rewards." V3

In line with the above quotes, many respondents highlighted the difficulty of constructing a reward metric. This was seen as particularly difficult in situations where it is not possible to directly measure the quality of the work performed by employees. All respondents believed that motivating employees was the primary purpose of a reward system. They also emphasised the ability of reward systems to encourage collaboration and to engage employees in achieving common goals, as well as to ensure that rewards are linked to the success of the organisation.

"A reward system increases productivity, quality and customer satisfaction". V6

This finding is consistent with previous studies which found that an effective reward system improves the achievement of the organisation's business objectives and motivates employees to perform better (Meirinhos et al., 2023; Leroy, 2024).

4.2. Investigating rewards forms

In conformity with previous studies, reward solutions should include a combination of monetary and non-monetary compensation packages (Chatzoglou et al., 2024; Ariani, 2023; Shortland and Perkins, 2023; Patel et al., 2023). In this study, all respondents reported that both monetary and non-monetary rewards were used in the organisations they represented. While some organisations made more use of 'traditional' monetary rewards, respondents indicated that qualitative rewards provided a deeper insight into employee performance and engagement.

"The annual bonus includes both monetary and social rewards". V6

"Whatever roles require a certain level of performance, then that's rewarded - we try to talk about total rewards." V4

"When it comes to non-monetary rewards, we should have more than just the word 'thank you'." V1

As the above quote illustrates, companies use both monetary and non-monetary forms of reward to motivate and engage employees and support the achievement of strategic objectives. Reward schemes varied according to the needs, resources and culture of the organisation and were also used to promote wellbeing in the workplace and strengthen the working community.

According to respondents, reward schemes are supportive, and important to business operations if they are clear and motivating. Their effectiveness, and therefore their importance as a management tool, become reduced when they were unclear or unfair. There were similarities between all the reward schemes surveyed in terms of setting objectives and rewarding good performance, with a clear correlation. However, there were differences in the structure and complexity of the reward systems, linked to the specific needs and strategies of the companies.

"Very often top management think they know what is right and good. In reality, they rarely do, and it would be much wiser and more engaging to listen to what the company's employees think and let the HR experts suggest what would be a good, engaging and socially rewarding reward". V2

The above quote is consistent with combining some aspects of agency theory with self-deterministic approaches to explain why and how managers and employees are not motivated by the same things (Shaw 2024). The interviewees pointed out that creating a reward system using a top-down technique can be problematic because management may not be fully aware of the types of rewards that motivate subordinates. Some of the interviewees, however, insisted on difficulties to quantify social rewards:

"The concept of social rewards is not very well known and there is room for improvement." V1

"For me as a manager, it is unclear what a social reward could actually be." V2

Rewards highlight what is important to the organisation. This study shows that the basis of rewards is based on traditional financial values. Social rewards were the most underdeveloped of all the companies and the concept was little known or understood. All respondents emphasised that they were not fully aware of what social rewards entailed and said that further research and reflection was needed. Several interviewees suggested that social rewards were at least loosely related to employee wellbeing and could therefore also contribute to organisational success. Although respondents had little experience of social rewards, there seemed to be an interest in them. Many felt that good social rewards could even be a better and more cost-effective form of reward.

"I have noticed that young employees are not motivated by money alone, they value other things than what the traditional reward system offers. V5

Hence, it can be interesting to investigate in another study the role of recognition as a social reward in the companies analysed or elsewhere (Chatzoglou et al., 2024; Larsson et al., 2022)

4.3. Monitoring and communicating the reward system

All respondents stressed the need to develop transparency and fairness in reward systems. The frequency and method of monitoring varied from company to company. Some monitored progress against objectives monthly and at an individual level, while others monitored less frequently and at a group level. Many interviewees stressed the need to involve employees more actively in the development of reward systems.

"My guess is that a good system based on participation would ultimately cost less but generate much more". V2

The interviewees stressed the importance of monitoring objectives and the need for employees to be able to see how their performance contributes to the achievement of the objectives set. Here, communication is important:

"In terms of areas for development, I would highlight communication, making (the reward criteria) more visible. I would almost say communication twice". V4

"The whole issue of reward is topical." V3

"Rewarding good performance engages and incentivises more than a bonus paid once a year". V5

However, communicating reward information at different organisational levels can be challenging for a senior manager:

"I find it challenging to communicate at different levels of the organisation that employees can influence the work and thus the results". V5

"We have become so used to bonuses that they are almost perceived as a fixed part of salary and performance. The distributed organisational model also challenges the incentives". V5

The interviews expressed the need for continuous improvement of reward systems to reflect on environmental changes:

"You just have to accept that any reward system is never perfect. It's always a bit imperfect and needs to evolve over time". V2

We argue, in consequence, that our interviewees confirmed the ongoing debate according to which a combination of agency, stewardship and self-determination theories would managers to continuously improve their reward systems depending on contexts rather than relying on a static performance based reward system (Larsson et al., 2022; Shaw, 2024; Lee, 2024; Torfing and Bentzen, 2020).

Conclusion

The aim of this study was the way employees' perceptions and attitudes towards rewards may affect the success of a reward system that their organisations have implemented. More specifically, the study asked how employees that work in different organizations explain and appreciate their organisation's reward systems. Drawing from interdisciplinary literature that combines agency and self-determination theories to analyse the role of rewards in performance management and control, we conducted a case-study in five different organisations operating in Finland during winter 2024. Data were based on interviews and company information available online. Main findings are that all the companies combine monetary and non-monetary rewards to motivate employees to perform better. Communication at different hierarchical levels, reward transparency, and employee involvement in designing and controlling rewards at different hierarchical levels improve the commitment of employees to believe that rewards are good. However, the concept of social reward such as saying, "thank you", or employee recognition play a pragmatic roll. One interviewee indicated that more than "thank you" is necessary. This study contributes to specific literature discussed in the findings section and improves our understanding of why and how people operating in different industries and at different hierarchical level continue to appreciate monetary rewards in addition to non-financial rewards in a welfare country, like Finland. Empirical findings of this study are limited to the persons interviewed. Further research may analyse micro-organisational and psychological factors that organisations would use to improve reward transparency employee commitment to performance-based reward systems applicable in their workplaces.

References

Agrawal C. (2012), Performance-Related Pay-Hype Versus Reality: With Special Reference to Public Sector Organizations, *Management and Labour Studies* 37(4), pp. 337-344.

Ariani D.W. (2023), Relationship Model of Compensation, Motivation, Job Satisfaction and Employee Performance, *International Review of Management and Marketing* 13(4), pp. 9-13.

Bosse D.A., Phillips R.A. (2016), Agency Theory and Bounded Self-Interest, *Academy of Management Review* 41(2), pp. 276-297.

Celik H., Nowicki D.R., Uvet H., Adana S., Cevikparmak S. (2023), Supplier Goal Commitment in Performance-Based Contracts: The lens of Goal-Setting Theory. *International Journal of Physical Distribution and Logistics Management,* 53(10), pp. 1158-1186.

Chatzoglou P.D., Diamantidis A.D., Karras A. (2024), Unveiling Employee Motivating Factors During Economic Crisis Periods: A Structural Approach, *Journal of Occupational and Organizational Psychology*.

Dagher J., Boustani N.M., Khneyzer C. (2024), Unlocking HRM Challenges: Exploring Motivation and Job Satisfaction within Military Service (Laf), *Administrative Sciences,* 14(4).

Larsson B., Ulfsdotter Eriksson Y., Adolfsson P. (2022), Motivating and Demotivating Effects of Performance-Related Pay in Swedish Public Sector Organizations, *Review of Public Personnel Administration,* 42(3), pp. 444-463.

Lee J. H. (2024), Perceptions of Organizational Politics and Organizational Commitment: Role of Personal Motive and Ability, *International Journal of Organization Theory and Behavior* 27(2), pp. 139-160.

Leroy H. (2024), Motivating People to Work: The Value Behind Diverse Assumptions, *Journal of Management Studies,* Ahead of print (n/a).

Malek S. L., Sarin S., and Haon C. (2020), Extrinsic Rewards, Intrinsic Motivation, and New Product Development Performance, *Journal of Product Innovation Management,* 37(6), pp. 528-551.

Meirinhos G., Cardoso A., Neves M., Silva R., and Rêgo R. (2023), Leadership Styles, Motivation, Communication and Reward Systems in Business Performance, *Journal of Risk and Financial Management*, 16(2).

Patel C., Ahmad Husairi M., Haon C., Oberoi P. (2023), Monetary Rewards and Self-Selection in Design Crowdsourcing Contests: Managing Participation, Contribution Appropriateness, and Winning Trade-Offs, *Technological Forecasting and Social Change,* 191.

Rixom B.A., Rixom J.M. (2023), Strive for Rewards or Keep Them Accountable? Motivating Employees' Effort and Performance. *Journal of General Management*.

Shaw J.D. (2024), A Cautionary Tale: On the Adoption of Self-Determination Theory Principles for Practice, *Journal of Management Studies*.

Shortland S., Perkins S.J. (2023), Quantum Accountability: When does Enough Become Too Much In top Pay Decision-Making?, *Employee Relations,* 45(6), pp. 1455-1475.

Siswanto S., Maulidiyah Z., Masyhuri M. (2021), Employee Engagement and Motivation as Mediators between the Linkage of Reward with Employee Performance, *Journal of Asian Finance, Economics and Business,* 8(2), pp. 625-633.

Torfing J., Bentzen T.Ø. (2020), Does Stewardship Theory Provide a Viable Alternative to Control-Fixated Performance Management?, *Administrative Sciences,* 10(4), 86.

Yin R.K. (2013). *Case Study Research: Design and Methods*. London: SAGE Publications.

Zhang Y.,W. He, Long L., Zhang J. (2022), Does Pay for Individual Performance Truly Undermine Employee Creativity? The Different Moderating Roles of Vertical and Horizontal Collectivist Orientations, *Human Resource Management,* 61(1), pp. 21-38.

Sustainable Performance: Unraveling the Nexus between ESG and Performance Management Systems

Edoardo Borlatto[*], *Elisa Truant*[*], *Elisa Giacosa*[*]
Luca Maria Manzi[*]

Received: 23 November 2023
Accepted:4 May 2024

Abstract

In the current highly competitive environment, firms are devoting growing levels of attention towards environmental, social, and governance (ESG) standards as a response to external pressure from stakeholders. Consequently, scholars are currently displaying heightened interest in examining the integration of financial and non-financial information, including ESG, within performance measurement systems (PMSs). Adopting broader PMSs would provide companies with a more holistic comprehension of their performance, consequently avoiding prioritizing solely financial and economic indicators while neglecting sustainability and social responsibility. We employed the Systematic Literature Review (SLR) protocol to carry out the research and conducted a comprehensive exploration of the subject under investigation. Specifically, we first constructed the research profile of the sample, offering an overview of the existing knowledge in the field. Subsequently, we performed a meticulous and qualitative examination of the prevalent emerging themes discovered in the sample. Finally, the review concludes by presenting a structured research agenda that outlines various avenues for future research.

Keywords: ESG, Performance Measurement System, Performance Management System, Non-financial reporting, Systematic Literature Review.

[*] University of Torino, Department of Management "Valter Cantino". Corresponding author: edoardo.borlatto@unito.it.

Management Control (ISSN 2239-0391, ISSNe 2239-4397), 2024, 2 – Special issue
Doi: 10.3280/MACO2024-002-S1003

1. Introduction

In today's hyper competitive landscape, businesses are increasingly focusing their attention on environmental, social, and governance (ESG) standards (Gavrilakis&Floros, 2023), in response to external pressures from stakeholders. As sustainable business models are seemingly becoming the future for many organizations, managers and practitioners are looking for ways to monitor and disclose non-financial information, in addition to the business metrics they were already tracking and communicating to stakeholders. In other words, non-financial performance indicators such as operational efficiency, customer satisfaction, and employee engagement have now gained a much more significant strategic relevance for companies worldwide (Mc Williams *et al*, 2016). Consequently, scholars are now more interested than ever in investigating how performance measurement systems (PMSs) can incorporate both financial and non-financial information (Sardanelli et al., 2022, Broccardo et al., 2024). Specifically, this article aims to contribute to this research stream by defining the state of the art in academic literature regarding how control systems can integrate ESG factors. The benefits of broader PMSs would grant companies a more comprehensive understanding of their performance, without having to disregard sustainability and social responsibility in favor of purely financial and economic indicators.

Having now provided a clearer understanding of how crucial it is for PMS to effectively incorporate ESG metrics, our attention will be turned to the intersection between the two aforementioned literature streams. In doing so, it can be seen how previous research has yet to comprehensively synthesize said intersection, even though scientific production has increased in recent years, partially due to the rising interest shown by managers and practitioners. Consequently, while several systematic literature reviews (SLRs) have previously synthesized the PMSs and ESG streams separately (Posyer & Daugaard, 2023; Savio *et al.*, 2023; Betto *et al.*, 2022; Vegter*et al.*, 2021, Demartini & Pagliei, 2023), an attempt has yet to be made when it comes to the inclusion of those non-financial factors, specifically in PMSs. Thus, our research strives to fill the above-mentioned gap, in a few clear ways. First, our SLR attempts to critically examine the current state of the art on the topic and, by doing so, to provide a snapshot of the current scientific production, in terms of key publications, geographical distribution, the most relevant sources and authors, along with an automated keyword analysis to analyze the bibliometric data found amid the sample. Additionally, our SLR strives to critically extract and highlight extant research gaps, thus contributing to the creation of a structured research agenda that could drive future scientific endeavors and contribute to the development of the field.

In light of the aforementioned considerations, our SLR endeavors to address the following research inquiries:
RQ1: What is the present status of scholarly output pertaining to the intersection of PMS and ESG criteria?
RQ2: What potential avenues for research can be delineated from the constraints and voids identified within existing academic investigations?

The use of SLR methodology is particularly suitable for conducting research into the relationship between PMS and ESG. It allows for a detailed and specific definition of the characteristics of the topic under examination with an in-depth reading of complete papers. Furthermore, it enables the identification of research gaps, from which to develop a future research agenda as a starting point for further investigations. The research team's objective is to address RQ1 by outlining the current research streams on ESG factors and PMS, including identifying influential authors, significant contributions, most prolific countries, and most relevant publishing outlets. The goal is to conduct a comprehensive review of existing literature, which will provide scholars with a summary of the current literature and help identify gaps in the literature for future research. The review will utilize a rigorous and iterative process of manual content analysis to identify emerging themes from the sample, leading to the development of a structured research agenda, thus addressing RQ2. This review will make theoretical and practical contributions to the existing literature by providing a structured research agenda for future researchers. Moreover, the present review will provide valuable insights and directions for future academic research, along with practical insights for professionals.

2. Literature background and design of the study

Prior to delving into a detailed examination within the review, it is crucial to establish the conceptual framework of this study by reviewing the key concepts used to conduct the review. We decided to begin with a contextualization of ESG factors before delving into the definition of the pillars that were chosen for this paper. ESG principles encompass a range of non-financial metrics that can significantly impact a company's performance and overall value, either positively or negatively (DasGupta and Roy, 2023). Investors and stakeholders evaluate a company's sustainability and social impact based on their ESG score. The significance of ESG considerations has seen a notable upsurge in recent years, primarily driven by escalating concerns regarding environmental issues and corporate social responsibility. ESG performance metrics are widely adopted as evaluative tools to gauge a company's operational efficiency across various domains, encompassing aspects such as energy consumption, greenhouse gas emissions, labor relations, human rights, diversity, and anti-corruption policies (Truant et al., 2024). Stakeholders, including investors, customers, employees, and regulatory bodies, are progressively emphasizing the imperative for companies to operate in a manner that exhibits responsibility from both social and environmental standpoints. The mounting apprehensions of these stakeholders have compelled organizations to embed ESG factors into their decision-making processes, thereby elevating ESG performance to a pivotal component of their strategic framework (Adams C.A., 2017). Within scholarly discourse, there has been an ongoing debate concerning the extent to which companies should accord priority to ESG considerations within their decision-making procedures. Some studies have posited a robust connection between ESG factors and risk management, particularly concerning financial risk (Broadstock et al., 2021; El Khoury et al., 2022), and have additionally suggested potential positive implications on financing, governance, and long-term economic value (Albuquerque et al., 2019; Cheng et al., 2014). Nonetheless, a consensus on the unequivocal correlations between ESG factors and the aforementioned outcomes is yet to be achieved. Consequently, the discussion surrounding ESG remains an area of active inquiry, as scholars endeavor to gain a deeper understanding of its role and impact on a company's overall performance (Atan et al., 2018; Landi et al., 2022). Even though several definitions of ESG exist, we have adopted the one presented by Whitelock (2015), depicting ESG as follows: "a set of activities or processes associated with an organization's relationship with its ecological surroundings, its coexistence and interaction with human organisms and other populations, and its corporate system of internal controls and procedures to direct, administer, and manage all the affairs of the organization, in order to serve the interests of stockholders and other stakeholders."

We will now focus on the definition of PMS. PMSs can be distilled into two fundamental constituents, namely, performance metrics and the requisite supporting infrastructure, as posited by Franco-Santos et al. (2007). While the significance of performance metrics is widely acknowledged, a unanimous consensus regarding the formulation of these metrics remains elusive (Di Tullio et al., 2021). Notwithstanding the persistent scholarly discourse and variances within the literature pertaining to this facet, we adhere to the

definition delineated by Moullin (2003). He characterizes PMSs as evaluative instruments with the primary purpose of overseeing the efficacy of organizational management and the delivery of value to stakeholders.
The incorporation of ESG considerations within PMS is of paramount importance, as it enables a comprehensive exploration of the intersections between strategic PMSs and the evaluation of corporate sustainability (Rajnoha et al., 2016). Both these systems are designed for adoption by larger enterprises seeking to enhance their operational performance and navigate their business ventures toward a sustainable, long-term trajectory. Recently, both paradigms have garnered substantial attention within academic discourse, particularly concerning the nexus between ESG and PMS, and the escalating significance of their integration in light of the pivotal role of non-financial reporting within the global economic landscape (Saini et al., 2022; Zhou et al., 2023).

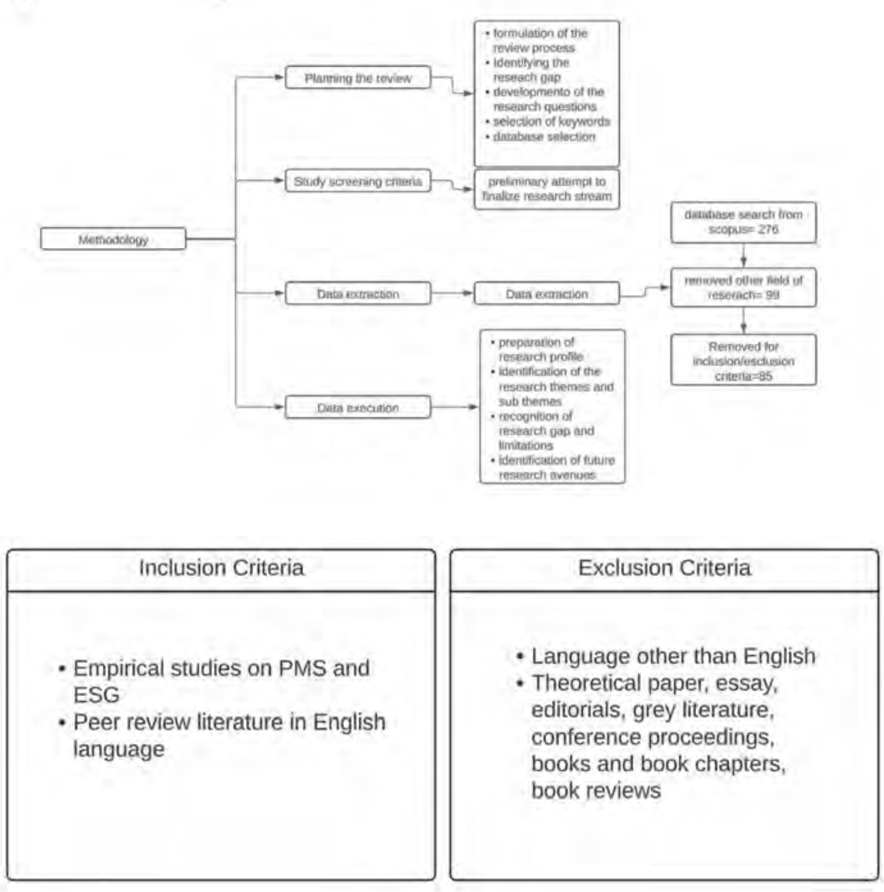
Nonetheless, due to the relatively nascent amalgamation of these two conceptual domains, the field remains dynamic and brimming with substantial potential for further expansion.

3. Research methodology

To undertake this research, the authors employed a SLR protocol and conducted a comprehensive examination of the subject matter in question. More specifically, the authors initiated the research by constructing a profile of the sample, aiming to present a comprehensive overview of the current state of knowledge pertaining to PMSs and ESG considerations.
Subsequently, the review process encompassed a rigorous, qualitative analysis of the recurrent, emergent themes identified within the sample. The review culminated in the formulation of a meticulously structured research agenda, which delineates several potential avenues for future research. SLRs are extensively utilized within the domains of business and social sciences, primarily due to their inherent advantages over alternative literature review methodologies. These advantages include the principles of replicability, transparency, and the reduction of human bias.

Figure 1, displayed below, provides an overview of the procedures undertaken to establish the final sample employed in this study. A detailed description of this procedure will be presented in the following paragraph.

Figure 1 – Research protocol



In order to initiate the analysis the research team wrote a detailed review process, and an initial research stream was meticulously formulated for the purpose of constructing the sample. Following the delineation of research questions as outlined in the introduction, the research team proceeded to determine the type of studies. Moreover, a comprehensive literature review was conducted, search words were selected and the database was chosen to carry out the investigation. Subsequently, the impact of articles through a bibliometric analysis presented in the research profile section of this article was measured and an analytical framework used for the content analysis was defined. Validity and literature reliability were tested thanks to the collaboration of some academics and practitioners specialized in the subject. The data coding was then performed using the developed framework. Insights and critiques were developed through the analysis of the dataset, and, finally, future research paths and questions were formulated (Massaro et al., 2020). This process encompassed a methodical three-step procedure (Pittaway et al., 2014). In the initial stage, a thorough investigation was carried out on Google Scholar to discern the prevailing search terms utilized in the prominent literature. This process was imperative to ascertain the necessity for the literature review, as well as to validate research gaps and identify the keywords employed in research (Kraus et al., 2020). In the second step, the authors embarked on a concerted effort to refine the selection of keywords by consulting the scientific literature on PMS and sustainability. This involved the specific objective of pinpointing existing literature reviews that had previously employed analogous keywords to those intended for the current study. By scrutinizing such reviews, the authors aspired to ensure the curation of a robust and pertinent set of keywords, designed to facilitate a thorough and focused literature search. This methodology closely adheres to the recognized best practices in the domain of systematic literature reviews, which underscore the paramount importance of deploying a rigorous and reproducible approach to ascertain the validity and dependability of research findings. The third and ultimate step entailed a further augmentation of the precision and comprehensiveness of the search strategy. This was achieved by actively seeking the counsel of distinguished scholars and experts well-versed in the domains of PMS and sustainability. These individuals were consulted based on their profound expertise in the subject matter. Their valuable input was instrumental in honing and refining the selection of keywords to ensure that they accurately encapsulated the breadth and depth of the pertinent literature. At this point, the research team decided to use the research stream composed of "performance management" OR "performanc* measur*" OR "performanc* assessment" OR "performanc* indicator*" OR "performanc* appraisal" OR "performanc* control*" OR "performanc* complexity" OR "performanc* strateg*" OR "performanc* measur* system" OR "performanc* management system" OR "performanc* measur* and management*" OR "organisationalperformanc*" OR "organizational performanc*" (Okwir *et al.*, 2018) AND "ESG*" OR “Environmental Social Governance” (Tsang *et al.*, 2023). The selection of Scopus as the primary database for data collection was made based on its widely recognized status as the most comprehensive peer-reviewed database (Norris & Oppenheim, 2007). Additionally, it is commonplace in the realm of systematic literature reviews for this database to serve as the primary tool for sample generation (Cunill et al., 2019; Khatib et al., 2021). Scopus offers a crucial advantage with its downloadable database, affording researchers convenient access to an extensive repository of bibliographic data relevant to a given research field. This repository includes vital information on journals, affiliations, citations, and references, all of which are integral components of a thorough and robust literature search. The initial research efforts resulted in the identification of 276 articles. Subsequently, the research team meticulously filtered out articles unrelated to the domains of business and management, ultimately retaining only those published in peer-reviewed journals in the English language. As an additional criterion for exclusion, the authors systematically examined the abstracts, keywords, and introductions of each record to ascertain their alignment with the conceptual framework delineated in Section 2. Articles that deviated from the specified scope were rigorously eliminated. These exclusionary procedures yielded a definitive sample of 85 articles. Publication years of the selected records were not limited to a specific time, thus allowing the authors to gain insights into the temporal evolution of the topic. This encompassed tracking emerging themes and yearly trends in scientific output.

After the finalization of the sample, in order to organize the findings, the authors of this manuscript analyzed all 85 studies to pinpoint their shared themes. The authors engaged in a comprehensive reading and review of each article in its entirety, with the aim of cultivating an in-depth understanding of the content of each publication. Following the procedures of manual content analysis, researchers developed codes and categories to classify the content of the documents, which were then applied to the identified articles. To ensure greater objectivity in the coding phase, researchers conducted the analysis independently. Once the application of the codes was completed, the results were analyzed to identify significant patterns and trends. (Costa et al. 2018). This method may be preferred when a deeper and contextual understanding of the material is desired. To facilitate an in-depth analysis of the sample, the authors harnessed the capabilities of VOSViewer and RStudio, enabling the creation of visual representations illustrating the research profile and the most frequently employed keywords. The automated analysis results yielded valuable insights into influential authors, annual scholarly production, significant sources, and the most prolific countries which were involved the most, thereby enhancing the depth of analysis and insights derived from the literature review.

4. Descriptive statistics of systematic analysis

This section will present a statistical description of the selected papers based on their bibliometric information. The analysis will provide data encompassing yearly scientific output, the countries garnering the highest number of citations, the most pertinent sources, and prevalent choices in research design. The initial graphical representation within this analysis is presented in Figure 2, which illustrates the yearly trends in scientific production.

Figure 2 - Most relevant sources

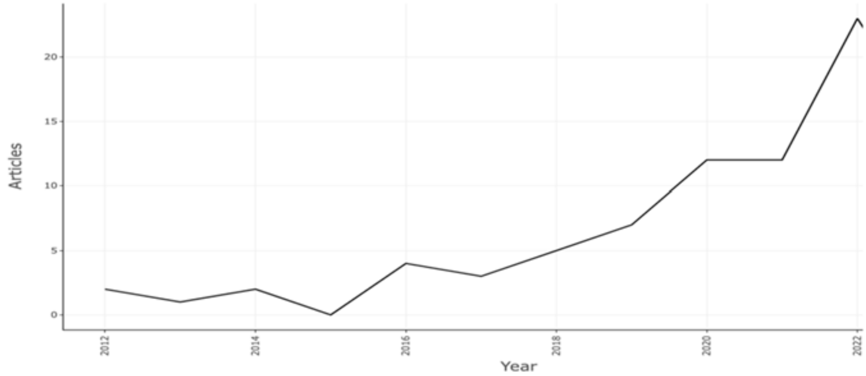


Figure 2 shows a very low production until the year 2017, followed by a significant increase culminating in the production of 22 items in the year 2022. We attribute the recent increase in production to the greater attention given to ESG following the COVID-19 pandemic and the introduction of new regulations that use ESG criteria as a standard for measuring sustainability.

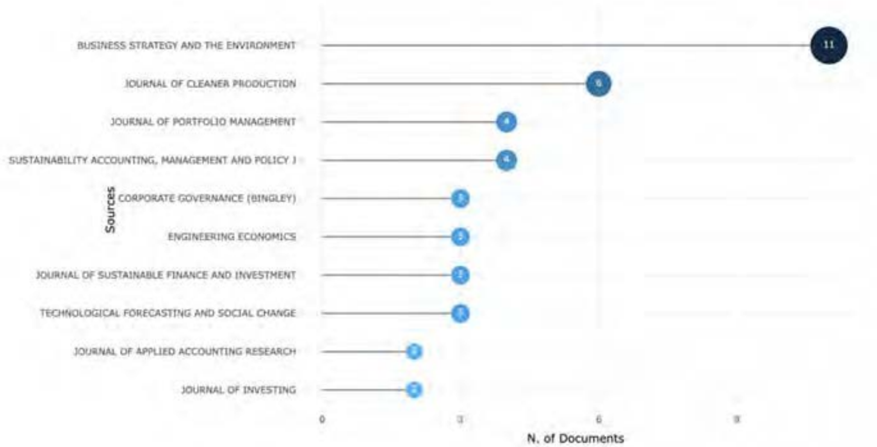


Figure 3 - Yearly scientific Production

Figure 3 delineates the dispersion of sample articles among diverse publication venues. It is important to notice that journals in this list have many different main topics that underline the relevance of this topic for many different research areas, not only for those more related to environmental issues.

Figure 4 - Geographic Scope of the Sample

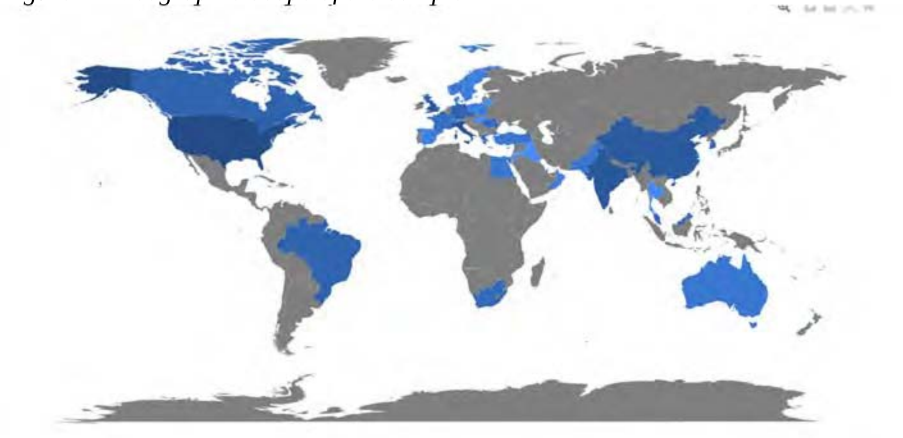


Figure 4 offers an overview of the geographical dispersion of the sample. When interpreting the results, it is important to consider how the English filter we applied in the sample selection process might have skewed the results towards English-speaking countries. It is also worth noting how countries might have different cultural preferences in terms of publication outlets, as publishing in peer-reviewed journals might not be as widespread from country to country. With the above caveat in mind, the depth of the blue shading is indicative of the extent of publication output in each country, with deeper shades denoting elevated levels of productivity. Notably, the United States and Italy emerge as the two nations exhibiting the most substantial levels of scholarly output in this domain. It is also important to notice that two Asian countries are making a significant contribution in terms of the number of papers written on the topic of ESG and PMS. The prominent roles played by China and India show that measuring sustainability is gaining wide and international academic interest in several different economies.

Figure 5 - Methodology distribution of the sample

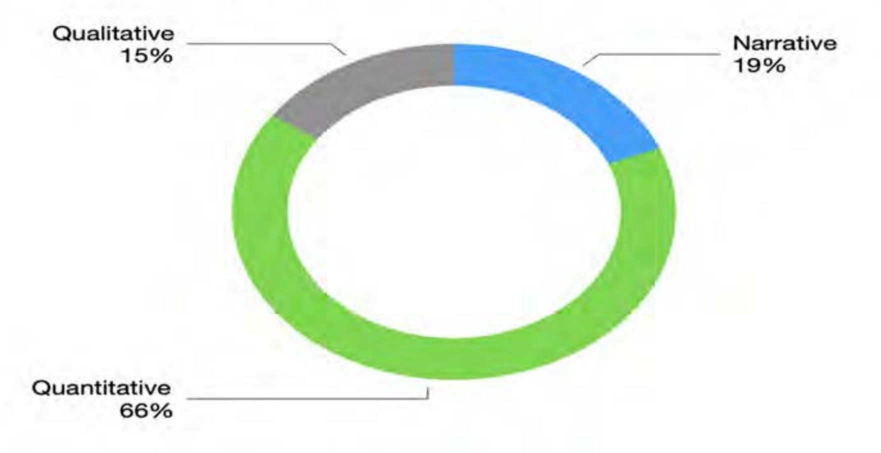


Figure 5 provides a visual representation of the distribution of research methodologies utilized within the sample. It is significant to note that over half of the research conducted in the sample was rooted in quantitative methods, while qualitative research accounted for 15% of the articles. Moreover, 12% of the articles adopted a conceptual approach. A more detailed exploration of the methodologies employed within the sample unveils that, in the context of quantitative research design, regression modeling emerged as the most prevalent method employed. (Kotiloglu, 2023; Gavrilakis & Floros, 2023; Koroleva *et al.*, 2020). As for qualitative research, in-depth interviews and case studies were the most commonly employed techniques (Veltri *et al.*, 2023; Chen *et al.*, 2022; Matemane *et al.*, 2022).

Figure 6 Theory distribution in the sample

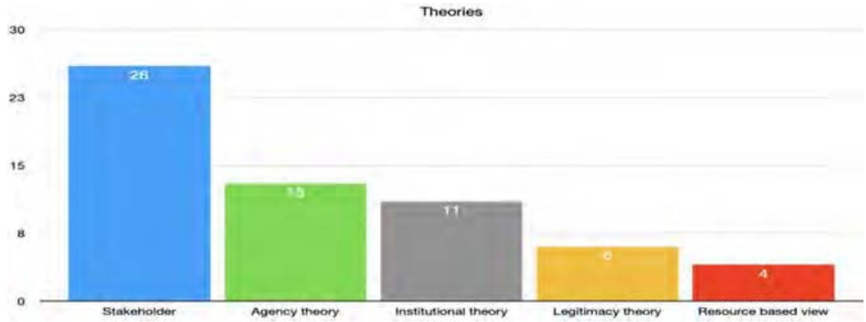


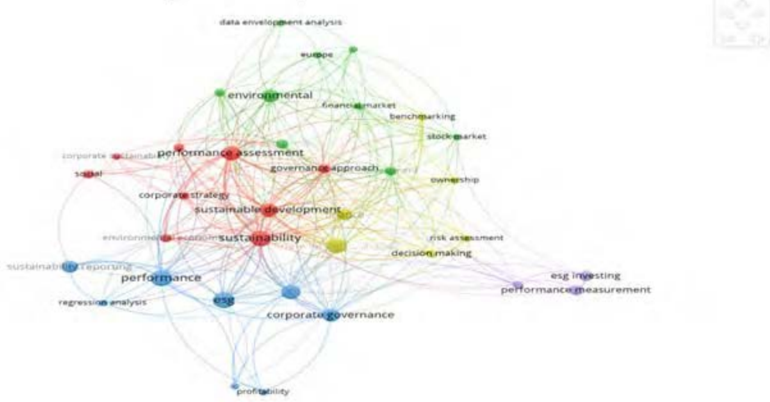
Figure 6 features the distribution of theoretical underpinning found in the sample. A conspicuous prevalence of the stakeholder theory was observed, particularly in articles focused on demonstrating the effect that performance measurement of ESG have on companies' performance. Other theoretical frameworks include the agency theory, which is specifically linked to ESG disclosure, and the institutional theory (Buallay, 2022; Alawaj *et al.,* 2022; Aluchna *et al.*, 2019). We decided to include the resource-based view in Figure 6 too, even though it is not unanimously considered to be a proper theory, to enlarge the theoretical reference lens of the sample in consideration. Some articles were not supported by any theory or some theories were present just in one paper, thus we decided to include solely the most relevant theories in Figure 6.

The prominence of sustainability as a central theme within the PMS literature can be partially attributed to the increasing recognition of the significance of ESG factors. To gain a more comprehensive understanding of the evolution of this literature over time, the authors harnessed the capabilities of VOSViewer, a specialized software tool designed for the generation and visualization of conceptual maps using bibliometric data. The resultant two-dimensional maps vividly illustrate the recurring keywords encountered within the sample, with larger labels signifying the greater relevance of these keywords. Moreover, the proximity of keywords on the maps signifies their level of interconnectedness, as determined by the frequency of co-occurrences within the corpus dataset. This analytical approach was employed with the intent of visualizing clusters of keywords and obtaining a deeper comprehension of how the literature stream progresses, particularly with respect to pivotal emerging themes.

5. Findings

Historically, investors have employed multiple methods and approaches to evaluate a company (Cubas-Diaz &MartìnezSedano, 2018), mostly taking into consideration economic and financial factors, such as financial risk and profitability. More recently, following the observation of a direct correlation between ESG evaluations and market value, sustainability factors have also begun to be considered (Buallay, 2019). The above-mentioned developments in company evaluation have led to the need for new measurement methods for the sustainability aspect (Gebhardt *et al.* ,2022). Bearing in mind the context that has been described previously, it was deemed to be important to perform the following keyword analysis to assess the current state-of-the-art on ESG and PMSs. Figure 7 features the results of a keyword analysis performed on bibliometric information extracted from the sample. In order to perform the keyword analysis, we first collected data with the help of Microsoft Excel, then employed the VOSviewer software, version 1.6.16 (Van Eck and Waltman, 2010). The software allows to visually interpret data with a map based on co-occurrence, thus highlighting the connection between clusters of keywords.

Figure 7 VOSViewer Keywords Analysis



By observing the map provided by VOSViewer, it is possible to identify five distinct clusters of keywords. The red cluster appears to be the most central one, featuring keywords such as “Environmental”, “Sustainability”, and “Sustainable development”, and further corroborating the increasing levels of attention companies put into sustainability as a whole. Interestingly enough, a second cluster refers to governance as a topic, with keywords such as “Corporate governance”, and “Corporate strategy”. In this part of the cluster we also decided to consider words such as ownership and decision making, due to the conceptual affinity among these themes. The clusters roughly point to the three distinct ESG pillars. In fact, we can also identify a third cluster featuring finance-related keywords, such as “Finance”, “Finance performance”, “Stock market” and “Financial market”. The last cluster consisting solely of the words “ESG investments” and “performance measurement” will not be considered in our analysis because those were the words used in the research stream, thus inevitably leading to their presence in a cluster.

5.1 The outcomes of ESG integration on performance

The impact ESG has on a company's performance differs significantly from one study to the other, thus implying a lack of a universal agreement on the effects the integration of ESG in measurement systems has. For instance, Bullaya (2019) mentions how an increased level of attention towards ESG might lead to favorable value creation, thus having beneficial effects on market performance, but a simultaneously negative impact on financial and operational performance. On the other hand, a few studies have shown that proper ESG integration leads to better financial performance, with a consequent increase in market value. For example, Chen *et al.* (2022) show a positive correlation between ESG scores and a lower cost of capital, thus potentially leading to an improved financial performance. Additionally, Zhou *et al.* (2022) examined the relationship between ESG performance, financial performance, and market value of A-share listed companies by utilizing a mediation effect model with panel data. Their findings demonstrate that (1) improving the ESG performance of listed companies has a positive effect on their operating capacity, but does not significantly impact profitability or growth capacity; (2) enhancing ESG performance of listed companies contributes to increasing their market value, with operating capacity serving as an important mediating factor in this relationship; and (3) further investigation reveals a complete mediation effect for listed companies with non-state-funded actual controllers, while no mediation effect exists for those with state-funded actual controllers. A first contribution in integrating ESG in PMS is provided by Sardanelli *et al.* (2022) who proposed a measurement system that is specifically designed for assessing the growth potential of small and medium-sized enterprises (SMEs). The system integrates financial and non-financial metrics into a comprehensive framework, The proposed system includes ESG measures as an integral part of a company's financial and operational performance. The system is unique because it focuses not only on financial and operational metrics but also on sustainability. Specifically, the study has developed proxies for the three key areas of sustainability – environmental, social, and governance – and has incorporated them into the system. The proposed system is particularly beneficial for SMEs, as it can help them identify areas of improvement and growth potential by measuring their financial, operational, and sustainability performance. By integrating ESG measures into the system, the study recognizes the importance of sustainability and provides a comprehensive framework for assessing and managing it.

5.2 Towards new Systems to measure ESG performance

Authors generally agree that the newly found attention towards sustainability calls for a standardized measurement framework that could replace the numerous ratings currently available (Rajesh & Rajendran, 2020). Several benefits can be drawn from an effective monitoring system of ESG and sustainability metrics, one of which is making it easier for investors to evaluate a company (Ghebardt *et al.*, 2022),. For instance, Ghebardt *et al.* (2022) note how investors and companies alike would benefit from more clarity, especially in a competitive environment as volatile as the one we are currently living in. Consequently, they stress the importance of integrating ESG key performance indicators (KPIs) in management systems, and their positive impact on ESG performance, including the sub-dimensions of social performance. On a similar note, a few other studies have proposed alternative ways to investigate the ESG performance of companies. For instance, Cubas-Diaz & Martinez Sedano (2018) introduced the Relative Sustainable Performance Measure and the Measure of Commitment-Failure, both of which allow companies to perform a more conscious decision-making process, by weighing in ESG-related metrics. The tools are useful for both investors and companies to assess sustainability performance and adjust their business strategies accordingly. They are flexible, thus they have a vast range of applicability, as they can account for different resources and resource combinations. Additionally, Kocmanova & Simberova (2012) attempted to broaden the perspective discussed earlier, by integrating corporate governance (CG) performance indicators, deemed crucial as they provide insights into a company's sustainable performance and can influence its strategic decision-making. Moreover, CG indicators aid in monitoring how a company performs their overall evaluation processes. Assuming that the use of KPIs can aid companies in prioritizing and managing their goals effectively in evaluating ESG performance, it is important to underline that the environmental indicators must meet basic requirements such as clarity, simplicity, data transparency, comprehensiveness, and representativeness. In other words, CG indicators should be tailored around ESG performance in order to be effective in that regard (Kocmanova *et al*., 2012). Additionally, Kocmanova & Simberova (2014) suggested a few quantifiable elements that are susceptible to classification into three distinct domains: ecological (investments, emissions, resource utilization, waste), societal (community, human rights, employment protocols and adequate work conditions, product accountability), and corporate administration (oversight and disclosure, corporate administration efficacy, corporate administration framework, conformity). Their framework is intended to contribute to the ongoing efforts to measure corporate sustainability performance by providing a set of indicators that focus on the long-term risks and opportunities associated with a company's strategies.

We have seen how ESG performance is becoming increasingly crucial for companies (Di Tullio *et al.,* 2020), to the point PMSs are expected to adjust their scope in order to embrace ESG specific indicators. The above is mostly due to external pressure from stakeholders and investors, demanding a more standardized look at corporate performance data so as to better understand how companies fare when it comes to ESG. Although ESG reporting standards have improved transparency, there is still room for improvement to formulate decision-useful ESG data for future disclosures. Directories expand the analysis not only to the company but also to the supply chain for every sector. Through the supply chain, the social pillar is defined by indicators that measure attention towards employees, suppliers, distributors, and customers. The governance pillar demonstrates transparency and communicates ESG scores via CSR reports. Companies with higher ESG scores attract sustainability-attentive investors, with CSR showing a positive correlation with increased M&A value (Petridis *et al.,* 2022).

6. Future research directions

While several areas for future research exist, the first step is to clearly define ESG and, more specifically, their scope (Rajesh, 2020). In fact, a significant challenge for ESG research comes from the lack of a uniformed vision of what ESG is, which makes it difficult to compare studies and draw conclusions from such a vast range of applications. Thus, we urge future scholarly efforts to focus on the development of a comprehensive ESG framework that could extensively encapsulate its complex dynamics and multifaceted components. For instance, the study conducted by Rajesh (2020) employed the ESG ratings provided by Thomson Reuters, which differ from others, such as the Dow Jones sustainability indices. Thus, comparative studies could expand upon the afore-described discrepancies, possibly leading to a universal set of indicators to be used by scholars and practitioners. Furthermore, while Stakeholder Theory and Legitimacy Theory have been pivotal in understanding the integration of ESG factors into performance measurement systems, future research should broaden its theoretical scope. By incorporating additional theoretical frameworks researchers can gain deeper insights into the complexities surrounding the construction and effects of these systems. This multi-theoretical approach will enhance our understanding of how organizations navigate the evolving landscape of sustainability and governance, ultimately contributing to the advancement of theory and practice in this domain (Hristov & Appolloni, 2022).

6.1 ESG and companies' financial performances

A further significant direction for research is the correlation between ESG and financial performance. More specifically, further research could explore the extent to which incorporating ESG in PMS leads to enhanced financial performance (Wang & Sarkis, 2013). For example, Veltri *et al.* (2023) suggest that future research should look into more comprehensive models to evaluate ESG and financial performance, DEA (Data Envelopment Analysis) in the authors' words. Additionally, their study poses the question of which ESG pillar impacts financial performance the most, whether it be the environmental, social or governance standards. To this day, there is no solid scientific evidence that could point to one direction or the other (Beelitz *et al.,* 2021).

6.2 Expanding ESG measurement scope

Another avenue for future research would be to explore the effects that integrating ESG into PMS has on other facets of organizational performance, such as employee satisfaction, retention, and engagement (Celiker *et al.,* 2021). Identifying other employee outcomes would be a development worth investigating further, so as to explore, for instance, the effects on innovation and product development, among others (Alkaaran *et al.,* 2023). Additionally, further evidence is required to explore the adoption of ESG-integrated PMS across multiple industries, in order to highlight potential differences in impact arising from different contexts (Rajesh, 2020; Kaled *et al.,* 2018). For example, specific industries or strategic sectors may require specific ESG indicators to be monitored more intensively than others, thus prompting a more tailored adoption of ESG metrics into their PMSs. Additionally, a further question which remains partially unanswered is the extent to which ESG integration leads to unintended consequences or trade-offs for PMS adoption. Exploring the above- described issue, might be of significant value for both scholars and practitioners, as future research could look at the barriers to adoption or other forms of unwanted resistance. The studies examined have shown a disproportionate emphasis on environmental considerations over social aspects in the integration of non-financial aspects into PMSs, as highlighted by Lisi (2018). Therefore, future research endeavors should delve deeper into incorporating social dimensions into PMSs by developing novel methodologies to measure their associated performances adequately. Moreover, the analysis conducted indicates a prevalent focus on companies operating within specific production contexts. Hence, it is imperative for future research activities to adopt a broader investigative perspective aimed at defining and experimenting with an integrated, holistic, scalable, and adaptable PMS applicable to diverse managerial and production contexts. Given the imperative nature of integrating ESG considerations into PMSs throughout the supply chain (Nagirikandalage et al., 2023), forthcoming research endeavors should strive to delineate a methodological framework for assessing non-financial performance across the entirety of the supply chain. Currently there is a conspicuous absence of a universally acknowledged and comprehensive performance measurement framework in this sphere (Mengistu & Pannizzolo, 2024).

6.3 The role of Organizational Culture

The last, yet somewhat more extensive line of future research, involves the organizational implications of ESG-integrated PMSs. Organizational culture can play a critical role in determining the success of ESG integration into PMS. Thus, future research should investigate the moderating effect of organizational culture on the relationship between ESG and PMSs, and their effectiveness. Specifically, studies should examine the extent to which supportive organizational cultures can enhance the positive impact of ESG on the overall organizational performance. For example, the study conducted by Velte (2016) shows how ESG performance is influenced by the gender composition of the board, thus shedding light on a more extensive research gap regarding gender diversity and governance. Drawing upon the research gaps identified in the present SRL, we believe that the theme of the acceptance of ESG criteria by corporate culture is a fundamental component to be integrated into the PMS. This initial step, in fact, is characteristic of the successful integration of ESG principles into corporate dynamics.

7. Theoretical and Practical implications

The present SLR features both theoretical and practical implications. From a theoretical perspective, a significant contribution comes with the research profile itself, as it provides scholars and practitioners with a comprehensive snapshot of the current state of the art of the field. In the authors' intentions, the work is meant to provide scholars with an updated, comprehensive understanding of the field, thus aiding them in better positioning their research accordingly. Additionally, the manuscript provides a comprehensive, yet integrated look at the intersection between ESG and PMS literature, through a novel approach that has yet to be adopted. In addition, the present SLR also provides a critical overview of the existing gap found among the sample, thus providing scholars with a structured research agenda that could aid them in developing the field further by addressing said limitations. Several pathways for future research were identified and described in detail, namely the need for scholars to delve deeper into the issue of standardizing ESG performance measurement, and the need to expand the scope of PMSs to incorporate the full spectrum of the supply chain.

From a practical perspective, the review is also valuable to managers and practitioners, as it sheds light on the importance of ESG for sustainable development and business success (Sancak, 2023). It provides valuable insights to managers and practitioners by delving deeper into the integration of ESG scores in PMSs, illustrating the current state of the art around the topic and, more importantly, by addressing their determinants and outcomes. In conclusion, managers and practitioners are advised to consider the adoption of ESG metrics in their performance measurement processes, as they are proven to possess key strategic value for companies, regardless of the sector they belong to. Additionally, we advise companies to strive for more than mere compliance to ESG regulations and, instead, to make them a pivotal and integral part of their business strategy.

8. Conclusions and Limitations

In conclusion, this systematic literature review explored the relationship between ESG factors and performance management systems. By synthesizing and analyzing a total of 85 peer-reviewed articles, we were able to provide a comprehensive overview of the current status of research in the area. Regarding our first research question, we found that the relationship between ESG and performance management systems is complex and multifaceted. Our analysis revealed that ESG factors can have a significant impact on organizational performance, but this relationship is influenced by several contextual factors.

Furthermore, we identified several research gaps and opportunities for future research that address our second research question. Specifically, we proposed a structured research agenda that focuses on exploring the mechanisms and processes that underlie the relationship between ESG and performance management systems, as well as investigating the moderating effects of various contextual factors. While this study provides valuable insights into the relationship between ESG and performance management systems, it is important to note that there are some caveats to consider. For example, we only used the Scopus database to identify relevant articles, which means that some important studies published in other databases may have been missed. Additionally, there is always the possibility of human error in the selection and analysis of studies in a SLR. Therefore, additional systematic literature reviews to corroborate or refute our literature analysis and juxtapose our conclusions with theirs are strongly encouraged. In conclusion, this systematic literature review contributes to the growing body of research on ESG and performance management systems. Our study provides a comprehensive overview of the current state of the art, identifies research gaps and opportunities, and highlights the limitations of our approach. It is hoped that this review will serve as a valuable resource for researchers, practitioners, and policymakers who are interested in this important and highly relevant topic.

References

Adams C.A. (2017), Conceptualising the contemporary corporate value creation process. *Accounting Auditing & Accountability*, 30(4), pp. 906-931. Doi: 10.1108/aaaj-04-2016-2529.

Alhawaj A., Buallay A., & Abdallah W. (2022). *Sustainability reporting and energy sectorial performance: developed and emerging economies*.

Alkaraan F., Elmarzouky M., Hussainey K., & Venkatesh V. G. (2023), Sustainable strategic investment decision-making practices in UK companies: The influence of governance mechanisms on synergy between industry 4.0 and circular economy. *Technological Forecasting and Social Change*,187, 122187. Doi: 10.1016/j.techfore.2022.122187.

Aluchna M., Roszkowska-Menkes M. (2019), Integrating corporate social responsibility and corporate governance at the company level. Towards a conceptual model, *Engineering Economics*, 30(3), pp. 349-361. Doi: 10.5755/j01.ee.30.3.17511.

Atan R., Alam M.M., Said J., Zamri M. (2019), The impacts of environmental, social, and governance factors on firm performance: Panel study of Malaysian companies. *SocArXiv*. Doi: 10.31235/osf.io/ntz52.

Atkinson A.A., Waterhouse J.H., Wells R.B. (1997), A Stakeholder Approach to Strategic Performance Measurement. *Sloan Management Review*, 38(3), pp. 25-37.

Beelitz C., Cho G., Michelon D.M. (2021), Pastten Measuring CSR disclosure when assessing stock market effect Account, *Publ. Interest*, 21(1), pp. 1-22.

Betto F., Sardi A., Garengo P., Sorano E. (2022), The evolution of Balanced Scorecard in healthcare: A systematic review of its design, implementation, use, and review.

International Journal of Environmental Research and Public Health, 19(16), 10291. Doi: 10.3390/ijerph191610291.
Broadstock D. C., Chan K., Cheng L. T. W., & Wang X. (2021). The role of ESG performance during times of financial crisis: Evidence from COVID-19 in China. *Finance Research Letters*, 38, 101716. Doi: 10.1016/j.frl.2020.101716.
Broccardo L., Alfiero S., Culasso F. (2024), Enhancing Performance Management Systems in a challenging environment, *Management Control*, *1*, pp. 5-14. Doi: 10.3280/maco2024-001001.
Buallay A. (2019), Between cost and value: Investigating the effects of sustainability reporting on a firm's performance, *Journal of Applied Accounting Research*, 20(4), pp. 481-496. Doi: 10.1108/jaar-12-2017-0137.
Buallay A. (2022), *Sustainability reporting in food industry: an innovative tool for enhancing financial performance*.
Celiker U., Chowdhury J., Sonaer G. (2021), Undervaluation of employee satisfaction. *The Journal of Investing*, 30(4), pp. 51-64. Doi: 10.3905/joi.2021.1.173.
Chen H.-M., Kuo T.-C., Chen J.-L. (2022), Impacts on the ESG and financial performances of companies in the manufacturing industry based on the climate change related risks, *Journal of Cleaner Production*, 380, 134951. Doi: 10.1016/j.jclepro.2022.134951.
Costa E., Pesci C., Andreaus M., Taufer E. (2018), Empathy, closeness, and distance in non-profit accountability, *Accounting Auditing & Accountability*, *32*(1), pp. 224-254. Doi: 10.1108/aaaj-03-2014-1635.
Cubas-Díaz M., Martínez Sedano M.Á. (2018), Measures for sustainable investment decisions and business strategy – A triple bottom line approach: Measures for sustainable investment decisions and business strategy, *Business Strategy and the Environment*, 27(1), pp. 16-38. Doi: 10.1002/bse.1980.
Dai T., Tang C. (2022), Frontiers in service science: Integrating ESG measures and supply chain management: Research opportunities in the postpandemic era, *Service Science*, 14(1), pp. 1-12. Doi: 10.1287/serv.2021.0295.
DasGupta R., Roy A. (2023), Firm environmental, social, governance and financial performance relationship contradictions: Insights from institutional environment mediation. *Technological Forecasting and Social Change*, *189*, 122341. Doi: 10.1016/j.techfore.2023.122341.
Demartini P., Pagliei C. (2023), Can we trust ESG Ratings? Some insights based on a bibliometric analysis of ESG data quality and rating reliability, *Management Control*, 2 Suppl., pp 161-187, Doi: 10.3280/MACO2023-002-S1008.
Di Tullio P., Valentinetti D., Nielsen C., Rea M. A. (2020), In search of legitimacy: a semiotic analysis of business model disclosure practices, *Meditari Accountancy Research*, 28(5), pp. 863-887. Doi: 10.1108/medar-02-2019-0449.
Di Tullio P., La Torre M., Valentinetti D., Rea M.A. (2021), Toward performance measurement systems based on business models, *Management Control*, 1, pp. 97-122. Doi: 10.3280/maco2021-001-s1006.
El Khoury R., Nasrallah N., Atayah O.F., Dhiaf M.M., Frederico G.F. (2022), The impact of green supply chain management practices on environmental performance during COVID-19 period: the case of discretionary companies in the G-20 countries, *Benchmarking An International Journal*. Doi: 10.1108/bij-11-2021-0636.
Gavrilakis N., Floros C. (2023), ESG performance, herding behavior and stock market returns: evidence from Europe. *Operational Research*, 23(1). Doi: 10.1007/s12351-023-00745-1.
Gebhardt M., Thun T. W., Seefloth M., Zülch H. (2022), Managing sustainability – Does the integration of environmental, social and governance key performance indicators in the

internal management systems contribute to companies' environmental, social and governance performance?, *Business Strategy and the Environment*. Doi: 10.1002/bse.3242.
Habermann F. (2021), Corporate social performance and over-investment: evidence from Germany. *Journal of Global Responsibility*, 12(3), pp. 347-363. Doi: 10.1108/jgr-11-2020-0095.
Hristov I., Appolloni A. (2022), Stakeholders' engagement in the business strategy as a key driver to increase companies' performance: Evidence from managerial and stakeholders' practices. *Business Strategy and the Environment*, *31*(4), pp. 1488-1503. Doi: 10.1002/bse.2965.
Khaled R., Ali H., Mohamed E.K.A. (2021), The Sustainable Development Goals and corporate sustainability performance: Mapping, extent and determinants, *Journal of Cleaner Production*, 311. Doi: 10.1016/j.jclepro.2021.127599.
Khatib S.F.A., Abdullah D.F., Hendrawaty E., Elamer A.A. (2022), A bibliometric analysis of cash holdings literature: current status, development, and agenda for future research, *Management Review Quarterly*, 72(3), pp. 707-744. Doi: 10.1007/s11301-021-00213-0.
Kocmanova A., Karpíšek Z., & Klímková M. (2012), The construction of environmental indicators for determination of performance of esg indicators to support decision-making of investors. *Verslas: TeorijaIrPraktika*, 13(4), pp. 333-342. Doi: 10.3846/btp.2012.35.
Kocmanová A., Šimberová I. (2014), Determination of environmental, social and corporate governance indicators: Framework in the measurement of sustainable performance, *Journal of Business Economics and Management*, 15(5), pp. 1017-1033. Doi: 10.3846/16111699.2013.791637.
Koroleva E., Baggieri M., Nalwanga S. (2020), Company performance: Are environmental, social, and governance factors important?, *International Journal of Technology*, 11(8), 1468. Doi: 10.14716/ijtech.v11i8.4527.
Kotiloglu S. (2023), Exploring how organizational performance feedback influences corporate social responsibility (CSR): the moderating role of LGBT inclusion, *Journal of Strategy and Management*. Doi: 10.1108/jsma-09-2022-0170.
Kraus S., Breier M., Dasí-Rodríguez S. (2020), The art of crafting a systematic literature review in entrepreneurship research, *International Entrepreneurship and Management Journal*, *16*(3), pp. 1023-1042. Doi: 10.1007/s11365-020-00635-4.
Landi G.C., Iandolo F., Renzi A., Rey A. (2022), Embedding sustainability in risk management: The impact of environmental, social, and governance ratings on corporate financial risk, *Corporate Social Responsibility and Environmental Management*, 29(4), pp. 1096-1107. Doi: 10.1002/csr.2256.
Lisi I.E. (2018), Determinants and performance effects of social performance measurement systems, *Journal of Business Ethics*, *152*(1), pp. 225-251. Doi: 10.1007/s10551-016-3287-3.
Massaro M., Dumay J., Guthrie J. (2016), On the shoulders of giants: undertaking a structured literature review in accounting, *Accounting Auditing & Accountability*, *29*(5), pp. 767-801. Doi: 10.1108/aaaj-01-2015-1939.
Matemane R., Moloi T., Adelowotan M. (2022), Appraising executive compensation ESG-based indicators using Analytical hierarchical process and Delphi techniques, *Journal of Risk and Financial Management*, 15(10), 469. Doi: 10.3390/jrfm15100469.
Mengistu A.T., Panizzolo R. (2023), Metrics for measuring industrial sustainability performance in small and medium-sized enterprises, *International Journal of Productivity and Performance Management*, *73*(11), pp. 46-68. Doi: 10.1108/ijppm-04-2022-0200.
Nagirikandalage P., Kooli K., Binsardi A. (2023), Exploring the evolvement of environmental management accounting practices for achieving SMEs' sustainability in an emerging

economy, *International Journal of Accounting, Auditing and Peformance Evaluation*, *19*(2), pp. 203-219. Doi: 10.1504/ijaape.2023.132404.

Norris M., Oppenheim C. (2007), Comparing alternatives to the Web of Science for coverage of the social sciences? Literature, *Journal of Informetrics*, 1(2), pp. 161-169.

Okwir S., Nudurupati S.S., Ginieis M., Angelis J. (2018), Performance measurement and management systems: A perspective from complexity theory: PMM systems, *International Journal of Management Reviews*, 20(3), pp. 731-754. Doi: 10.1111/ijmr.12184.

Petridis K., Tampakoudis I., Drogalas G., Kiosses N. (2022), A Support Vector Machine model for classification of efficiency: An application to M&A, *Research in International Business and Finance*,61, 101633. Doi: 10.1016/j.ribaf.2022.101633.

Pittaway L., Holt R., Broad J. (2014), *Synthesising knowledge in entrepreneurship research: The role of systematic literature reviews (Handbook of research on small business and entrepreneurship)*. Edward Elgar.

Poyser A., Daugaard D. (2023), Indigenous sustainable finance as a research field: A systematic literature review on indigenizing ESG , sustainability and indigenous community practices, *Accounting and Finance*. Doi: 10.1111/acfi.13062.

Chandrasekharan R. (2020), Relating Environmental, Social, and Governance scores and sustainability performances of firms: An empirical analysis, *Business Strategy and the Environment*, 29(3), pp. 1247-1267. Doi: 10.1002/bse.2429.

Rajesh R. (2020), Exploring the sustainability performances of firms using environmental, social, and governance scores, *Journal of Cleaner Production*, 247, 119600. Doi: 10.1016/j.jclepro.2019.119600.

Rajnoha R., Lesníková P., Korauš A. (2016), From financial measures to strategic performance measurement system and corporate sustainability: Empirical evidence from Slovakia, *Economics & Sociology*, 9(4), pp. 134-152. Doi:10.14254/2071-789x.2016/9-4/8.

Saini N., Antil A., Gunasekaran A., Malik K., Balakumar S. (2022), Environment-social-governance disclosures nexus between financial performance: A sustainable value chain approach, *Resources, Conservation, and Recycling*, *186,* 106571. Doi: 10.1016/j.resconrec.2022.106571

Sancak I.E. (2023), Change management in sustainability transformation: A model for business organizations, *Journal of Environmental Management*, 330, 117165. Doi: 10.1016/j.jenvman.2022.117165.

Santos F. (2007), *Towards a definition of a business performance measurement system*.

Sardanelli D., Bittucci L., Mirone F., Marzioni S. (2022), An integrative framework for supply chain rating: from financial-based to ESG-based rating models, *Total Quality Management & Business Excellence*, pp. 1-20. Doi: 10.1080/14783363.2022.2069557.

Savio R., D'Andrassi E., Ventimiglia F. (2023), A systematic literature review on ESG during the COVID-19 pandemic, *Sustainability*, *15*(3), 2020. Doi: 10.3390/su15032020.

Simberova I., Kocmanova A. (2013), Modelling of corporate governance performance indicators, *Engineering Economics*, 23(5). Doi: 10.5755/j01.ee.23.5.2865.

Truant E., Giordino D., Borlatto E., Bhatia M. (2024), Drivers and barriers of smart technologies for circular economy: Leveraging smart circular economy implementation to nurture companies' performance, *Technological Forecasting and Social Change*, *198*, 122954. Doi: 10.1016/j.techfore.2023.122954.

Tsang A., Frost T., Cao H. (2023), Environmental, Social, and Governance (ESG) disclosure: A literature review, *The British Accounting Review*, 55(1), 101149. Doi: 10.1016/j.bar.2022.101149.

van Eck N. J., & Waltman L. (2010), Software survey: VOSviewer, a computer program for bibliometric mapping, *Scientometrics*, 84(2), pp. 523-538. Doi: 10.1007/s11192-009-0146-3.
Vegter D., van Hillegersberg J., Olthaar M. (2021), Performance measurement systems for circular supply chain management: Current state of development, *Sustainability*, *13*(21), 12082. Doi: 10.3390/su132112082.
Velte P. (2016), Women on management board and ESG performance, *Journal of Global Responsibility*, 7(1), pp. 98-109. Doi: 10.1108/jgr-01-2016-0001.
Veltri S., Bruni M. E., Iazzolino G., Morea D., Baldissarro G. (2023). Do ESG, factors improve utilities corporate efficiency and reduce the risk perceived by credit lending institutions? An empirical analysis, *Utilities Policy,* 81, April, 101520. Doi: 10.1016/j.jup.2023.101520.
Vincent W. (2015), Environmental social governance management: a theoretical perspective for the role of disclosure in the supply chain, *Int. J. Business Information Systems*, 18(4).
Wang Z., Sarkis J. (2013), Investigating the relationship of sustainable supply chain management with corporate financial performance, *International Journal of Productivity and Performance Management,* 62(8), pp. 871-888. Doi:10.1108/ijppm-03-2013-0033.
Williams Mc. (2016). *Strategic decision making for the triple bottom line*.
Zhou G., Liu L., Luo S. (2022), Sustainable development, ESG performance and company market value: Mediating effect of financial performance, *Business Strategy and the Environment*, 31(7), pp. 3371-3387. Doi: 10.1002/bse.3089.
Zhou R., Hou J., & Ding F. (2023), Understanding the nexus between environmental, social, and governance (ESG) and financial performance: evidence from Chinese-listed companies. *Environmental Science and Pollution Research International*, *30*(29).

The Interaction of Sustainability Governance Structure and Sustainability Management Control Systems: An Italian Case Study

Silvia Cantele[*], *Silvia Valcozzena*[*], *Bettina Campedelli*[*], *Chiara de' Stefani*[**], *Marco De Luca*[**]

Received: 07 November 2023
Accepted: 27 April 2024

Abstract

This study aims to analyze sustainability governance mechanisms and understand which roles and responsibilities fall under a governance system, as well as the processes of integrating sustainability into management control systems. Qualitative research focused on the case study analysis of SIT. Interviews were conducted with key figures within the firm regarding roles and responsibilities in sustainability issues to address the peculiarities related to sustainability governance design and implementation and to delve into the role of sustainability management control systems. Several documents were also analyzed: sustainability reports, sustainability plans, corporate monographs, and questionnaires related to participation in sustainability ratings and awards.
Based on a review of the literature on corporate governance and the integration of corporate sustainability into it, including the analysis of previous studies on sustainability management control systems, this study found that good sustainability governance and a coherent sustainability management control system play a key role. They provide support in decision-making, enable the implementation of strategic objectives consistent with sustainability targets, identify actions and best practices for effective improvement in sustainability performance, and enable the firm to pursue sustainable success. From a practical point of view, this case study represents a good example of how sustainability can permeate all business processes, thus providing opportunities for growth and continuous improvement.

Keywords: sustainability governance, sustainability management control, sustainability committee, corporate sustainability director, case study

[*] University of Verona, Department of Management. Corresponding author: silvia.valcozzena@univr.it.
[**] SIT Spa, Padova.

Management Control (ISSN 2239-0391, ISSNe 2239-4397), 2024, 2 – Special issue
Doi: 10.3280/MACO2024-002-S1004

1. Introduction

Corporate sustainability (CS) has a long and varied history as a central concept in both academia and the corporate world (Bansal and Song, 2017; Landrum, 2018). CS includes addressing the many challenges of sustainable development based on a holistic and systemic perspective, fostering the integration of the three dimensions of sustainability by incorporating them into the management of the firm (Lankoski, 2016; Landrum, 2018). More specifically, the path to sustainability is embodied in a firm's commitment and ability to transition from a traditional business model to a sustainable business model (Van Marrewijk, 2003).

The literature shows that firms incorporate sustainability into their business models in different ways (Bocken et al., 2013), developing short- and medium- to long-term initiatives and measuring performance and the achievement of their goals using different techniques (Taticchi et al., 2013).

Corporate sustainability is considered a very broad and multicriteria concept through which a firm implements a framework of rules, relationships, systems, and processes, particularly regarding the integration of social and environmental aspects into the usual business activities of a purely economic nature (Schaltegger and Burritt, 2005; Schrobback and Meath, 2020).

Research in the areas of CS and corporate governance is often treated separately, with less attention paid to the interaction between the two areas (Lu, 2021). However, the governance mechanisms are the basis of sustainability implementation. The motivation for a firm to engage in sustainability governance is linked to the achievement of specific business aims (Schrobback and Meath, 2020). Therefore, besides sustainability governance, firms should set corporate business aims to decide on a sustainability strategy. In the literature, a CS strategy has been defined as a firm's definition of its medium- and long-term aims in relation to balancing the economic, social, and environmental impacts necessary to achieve those aims (Baumgartner and Ebner, 2010).

A CS strategy requires a significant extension of the logic of profit as the sole objective because it is required to define and control social and environmental goals as well (Olivotto, 2022). This draws attention to the role played by management control systems in making these objectives increasingly integrated and complementary (D'Onza, 2022; Della Porta et al., 2023). The coexistence of sustainability governance and sustainability strategy and the incorporation of sustainability objectives into the management control systems are necessary to improve integrated business performance in all three dimensions of sustainability (Fiorentino et al., 2016; Della Porta et al., 2023).

Starting from a literature review on these issues that is still fragmented (Lu, 2021), the main objective of this study is to analyze the governance mechanisms of sustainability and to understand what roles and responsibilities fall under a sustainability governance system, as well as the corporate processes that promote the integration of sustainability into traditional management control systems.

In particular, the following two research questions are addressed:

- *RQ1*: What roles and responsibilities fall under a sustainability governance system?
- *RQ2*: How is sustainability integrated into firm management control systems?

Using corporate case study analysis, this research contributes to mapping the sustainability governance system by showing the organization of corporate roles in charge of sustainability issues at the top level and its relationship with management control systems. The case is presented to exemplify how the integration of sustainability into firms' governance and management control systems can permeate all business processes, thus providing opportunities for effective sustainability implementation, firm growth and continuous improvement.

2. Literature Review

2.1 A Governance Perspective on Corporate Sustainability

Over the years CS has been increasingly recognized as an essential component of any organization’s business strategies (Ashrafi et al., 2019). In fact, CS refers to how social, environmental, and economic issues should be managed both internally and externally (Windsor, 2006).

Addressing sustainability challenges requires appropriate governance approaches so that companies include sustainability in their decision-making and strategic choices (Newig et al., 2007; Voß and Bornemann, 2011). Although it has been shown that governance structures and systems can influence sustainability (Hillman et al., 2001; De Graaf and Stoelhorst, 2013), governance has not yet been given a central place in CS analysis (Formentini and Taticchi, 2016).

A corporate governance perspective on CS can help focus research on the ways the role of firms in society takes shape (Zaman et al., 2020). Corporate governance is very important for the long-term prosperity of any firm (Aras and Crowther, 2008). Similarly, sustainability is also critical to the continued operation of any firm and maintaining a competitive position in the marketplace (Zaman et al., 2020).

Based on Williamson's (2010) definition of governance, sustainability governance aims to implement governance tools within a regulatory environment to enable different groups of actors to act proactively in response to sustainability challenges (Heidingsfelder, 2019).

The sustainability governance structure implies an integrated approach in which all stakeholders interact with each other, promoting CS (Rehman Khan et al., 2022).

Indeed, previous studies have shown that sustainability governance enables better stakeholder management, develops capabilities for maximizing business value, reduces resource waste, and improves productivity monitoring by increasing overall performance (Michelon and Parbonetti, 2012; Rehman Khan et al., 2022).

The inclusion of social and environmental issues within corporate governance mechanisms offers the opportunity to better integrate strategic decisions and implement CS in a top-down decision-making process (Enciso-Alfaro et al., 2023; Zaman et al., 2020).

2.2 Characteristics of Corporate Figures Responsible for Sustainability Governance

In response to sustainability macro-trends, firms interested in guiding directors' decisions on sustainable development are developing sustainability strategies (López-Arceiz et al., 2022). A sustainability strategy presupposes the integration of new corporate figures into the governance model, capable of achieving the environmental, social, and economic goals that the company has formulated (Lee, 2011). Corporate figures with responsibilities on sustainability issues typically include the following: the board of directors, the environmental and/or sustainability managers (or managers with similar tasks), and the sustainability committees.

The board of directors (BoD) has two main functions. The first is to monitor managers to balance their interests with those of the shareholders (Godos-Díez et al., 2018; Uyar et al., 2020), ensuring compliance with social and environmental responsibilities and active participation in CS initiatives (Pucheta-Martínez and Gallego-Álvarez, 2019). The second concerns the provision and valorization of resources to help the firm effectively address CS issues and better carry out sustainability activities that optimize resource use (Godos-Díez et al., 2018).

As a high-level, decision-making body, the BoD determines the company's overall strategy and defines the lines of the sustainability strategy (Schrobback and Meath, 2020). Previous studies have indicated that the board decision-making process strongly reflects the board members' experience, skills, and values, so their different characteristics can influence the company's strategic decisions related to both financial and nonfinancial issues (Shahab et al., 2018; Uyar et al., 2020).

A sustainability manager is a figure who typically acts as a link between the board of directors and the CS strategy (Schaltegger et al., 2012). The main task of a sustainability manager is to implement the CS strategy, periodically reporting to the board of directors on the progress achieved (Schrobback and Meath, 2020).

Given the vast responsibilities of the BoD in different strategic aspects, in addition to a sustainability manager, many firms also appoint an internal corporate social responsibility (CSR) or CS committee (Danvila del Valle et al., 2019). Sustainability committees are subcommittees of the board created ad hoc to define and manage the firm's internal sustainability strategy (Eberhardt-Toth, 2017). The presence of sustainability committees plays a central role in formulating CS strategies and monitoring and reviewing sustainability performance (Mackenzie, 2007).

These committees, therefore, have a dual role. First, they are specifically responsible for guiding sustainability policies, and proposing initiatives and projects that improve the social, environmental, and economic aspects of the firm. Second, they provide support to the board of directors in fulfilling its responsibility toward the shareholders regarding the practices related to achieving the firm's sustainable success (López-Arceiz et al., 2022).

Earlier studies have quite often analyzed the relationship between the presence of a sustainability committee and the levels of CS performance (Orazalin and Mahmood, 2021; Uyar et al., 2021), usually confirming a positive impact of the committee (Liu and Zhang, 2017). Indeed, the creation of a sustainability committee shows the top management's commitment to tackling social, environmental, economic, and stakeholder issues (Velte, 2016) and allocating human resources specifically for improvements in the firm's sustainability performance (Elmaghrabi, 2021).

The sustainability committee is required to periodically submit strategies and related CS implementation methods to board members (Ricart et al., 2005), while both implementation responsibility and CS monitoring and reporting functions are delegated to a sustainability management team (Elmaghrabi, 2021). Therefore, good communication and a coordination plan among the different people dealing with sustainability issues at all levels of the firm are required for it to achieve sustainable success.

2.3 The Sustainability Management Control Systems

CS is a complex phenomenon that comprises a wide variety of elements relevant to achieving success in business (Lankoski, 2016). To better recognize and successfully manage these elements, it is essential to develop a broad understanding of management control, which includes a broad and well-structured concept of sustainability management control (Della Porta et al., 2023).

Changes in the global scenario in which firms usually operate require management to review the strategies, organizational models, and technical accounting tools periodically and systematically in use to adapt the business successfully and quickly to new socio-environmental requirements (Merchant and Riccaboni, 2001). Traditionally, in the literature, management control systems have been seen as elements of a broader set of tools for strategically improving both financial and non-financial performance outcomes (Marchi, 2020).

Corporate management control systems are pivotal in incorporating the sustainability values that the firm stands for (Hosoda, 2018) and in incentivizing employees and all stakeholders to behave accordingly (Hristov et al., 2022). If they are absent or incomplete, it will be quite difficult to make progress in that direction (Della Porta et al., 2023). The adoption of sustainability management control systems indicates a proactive approach to incorporating sustainability within strategies based on values and aspirations rather than conforming to external pressures (Della Porta et al., 2023). In this sense, some studies have shown that the proactive adoption of such systems is closely related to values, owner education, and awareness of the importance of sustainability (Spence, 2016; Schaefer et al., 2018).

Furthermore, previous studies on management control have often investigated the relationship between sustainability and control systems (Ditillo and Lisi, 2016; Maas et al., 2016), highlighting that new sustainability-oriented management control mechanisms promote the integration and effective implementation of sustainability into the firm's strategy (Molinari et al., 2021).

Thus, control systems have the task of supporting the firm in the achievement of the planned goals and strategy and are a key tool in the strategic development process aimed at integrating environmental, social, and economic sustainability into the business (De Villiers et al., 2016).

Consequently, individual elements of the control system must be monitored and reviewed periodically for the continuous improvement of business results (Maraghini, 2018).

For the management control of sustainability within the business processes, firms are required to communicate not only their financial but also their nonfinancial results through specific documents for reporting and disclosing nonfinancial information, as required by the 2014/95/EU directive (Molinari et al., 2021). Many firms through their sustainability reports and nonfinancial statements (NFS), report on their achievements and disseminate data and analysis carried out in compliance with the required criteria of transparency and veracity (Molinari et al., 2021). These considerations can be extended to the more recent Corporate Sustainability Reporting Directive (CSRD), the EU 2022/2464 directive, which will introduce a more widespread obligation to report.

3. Methodology

The purpose of this paper is, first, to describe in-depth a sustainability governance mechanism, analyzing in detail the structure of the governance body and the main corporate roles along with their tasks and responsibilities. Secondly, this paper aims to explore in depth the integration of sustainability into management control systems, also making use of the consultation of supporting documentation provided by the firm. The use of qualitative methodologies based proved suitable to better describe such a journey.

Case study analysis (Yin, 2003; 2018) allows one to get in touch with the real mechanisms and procedures adopted by the firm and the motivations of the actors and to go beyond the official content found in publicly disseminated documents and reports (Adams and Larrinaga-Gonzalez, 2007; Owen, 2008; Fiorentino et al., 2016).

A case study is a qualitative methodology in which data are collected with a high degree of detail relating to a single phenomenon or event with the aim of learning more about a situation that has not yet been studied in depth (Gomm et al., 2000; Njie and Asimiran, 2014). This method (Siggelkow, 2007) allows to achieve the research objectives of the present study because by getting in touch with corporate figures in charge of sustainability issues, one will fully understand the roles and functions of governance as well as how the integration of sustainability into corporate control and management mechanisms takes place, as well as the communication and diffusion mechanisms of the culture of sustainability (Della Porta et al., 2023; Ritchie et al., 2013).

From an operational point of view, the empirical analysis was concreted on the analysis of the single case "SIT," framed as a best practice because it presents a unique governance and management structure in which different roles at different decision levels have been appointed, and its process of sustainability planning has been designed to catch emerging sustainability issues from the bottom (operations), but at the same time, it is tightly linked with existing "top-down" business planning. The firm operates in an industry that is experiencing the transition towards green energy, and this obliged the firm to radically rethink its business model. SIT has made sustainability its core business, including it within its corporate mission and vision so that good social and environmental practices enter fully into all corporate functions. It also has a very solid and well-known organizational structure both nationally and internationally, so it can also be a good example to follow for many other sustainability-conscious companies that want to make a quantum leap within their organisational structures.

In fact, SIT, during 2022, despite the difficult economic and geopolitical situation, continued to invest significant economic resources in R&D and Sustainability, confirming itself as a key technology partner in the evolution of the supply chain toward hydrogen-ready products.

To support the case study analysis, three interviews were conducted with the Corporate Sustainability Director, the Governance, Risk and Sustainability Officer, and a Sustainability Specialist, totaling 4 hours.

All relevant corporate and sustainability documents were analyzed, including a business monograph describing the evolution of SIT, sustainability reports, sustainability plans, and materials and questionnaires related to participation in sustainability ratings and prizes (e.g., integrated governance index) (https://www.sitcorporate.it/sostenibilita/materiali-a-supporto/).

The interviews were transcribed and translated into English, while secondary data were read, and information of interest was translated into English and placed alongside the interview content to provide a broader and more detailed view of the case study.

The use of interviews with the help of secondary data achieves the objective of the article as the business documents help to frame the company in every part, grasping the business dynamics that the company wants to communicate to the outside world, while the interviews allow to go deeper and inside the organizations and internal planning mechanisms as the dialogue with specific figures on sustainability issues provides a more effective key to understanding the implementation of sustainability governance and the integration of it into the company's management control systems.

4. Case Study: SIT

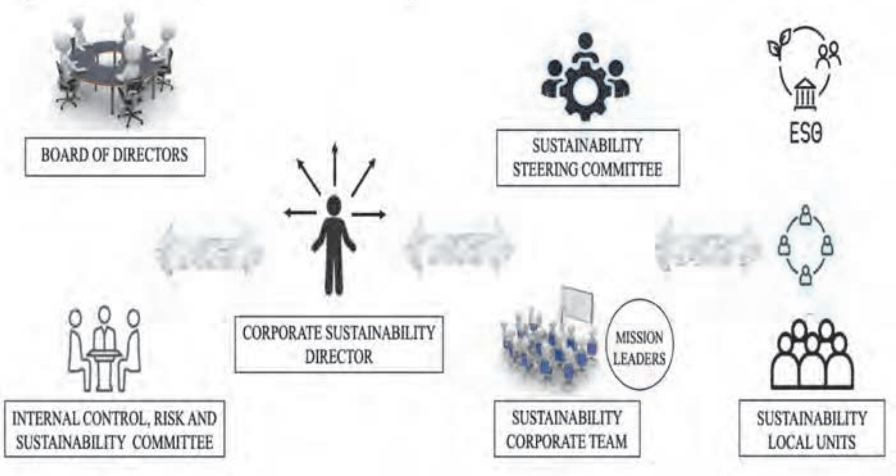
SIT has been operating in the energy transition for years, with the aim of providing the sector with solutions and technologies capable of supporting the progressive decarbonization of heating in line with the provisions of the REpowerEU legislation. First with biomethane, then with a mix of gas and hydrogen, and finally with 100% hydrogen, SIT has developed safety controls for both boilers and residential and commercial meters running on 100% hydrogen, acting as a sustainable partner of companies and institutions for the creation of solutions for energy efficiency and the protection of natural resources. Through the Heating & Ventilation, Smart Gas Metering, and Water Metering Business Units, SIT creates intelligent solutions for controlling environmental conditions and measuring consumption for a more sustainable world. SIT is headquartered in Padua, Italy, but the company is a multinational leader in the reference markets and listed in the Euronext Milan segment, presenting itself as the main sustainable partner of solutions for energy and climate control at the service of client companies, paying great attention to the experimentation and the use of alternative gases with low environmental impact. It has a turnover of about 300 million euros, employs more than 2000. The group has production sites in Italy, Mexico, Holland, Romania, China, Tunisia, and Portugal, as well as a commercial structure that covers all the reference world markets. SIT adheres to the United Nations Global Compact and the related principles that promote a responsible way of doing business. SIT is also a member of the European Heating Industry and the European Clean Hydrogen Alliance, as well as the Valore Acqua for Italy Community (www.sitcorporate.it). SIT was born as a family business, and 70 years later, although a stock market listing, it remains a firm with a distinct family imprint. Over the years, the firm has carried out major initiatives and projects on sustainability and environmental, social, and governance (ESG) issues (https://www.sitcorporate.it/sostenibilita/introduzione/).

In 2018, it published its first sustainability report in compliance with the 2014/95/EU directive. In 2019, it defined its new mission and vision, emphasizing how sustainability has become a core value to be promoted and disseminated inside and outside the group. This commitment of SIT to realize its ESG goals and strategy led to the definition of the "Green Paper" in 2020, which is the perfect summary of SIT's ESG commitment.

Additionally, starting in 2021, as a demonstration of its proactive attitude in the pursuit of sustainable success, and in response to the demands of the firm and its key stakeholders for accurate and systematic management of ESG issues, SIT created a sustainability governance structure (Fig.1) (https://www.sitcorporate.it/sostenibilita/governance-e-compliance/).

The first task assigned to the newly formed sustainability governance team was to draft a sustainability plan, called "Made to Matter" (https://www.sitcorporate.it/sostenibilita/made-to-matter).

Fig.1 - Structure of SIT sustainability governance



Characteristics of Corporate Figures, Communication Flows, and Decision-Making Mechanisms within SIT Sustainability Governance

Figure 1 illustrates the corporate figures and the decision-making and strategic flows of how SIT's Sustainability Governance is structured.

The evolution of the governance structure in SIT is a real journey to understand the contribution that governing bodies can make to internal and external decision-making processes (Gubitta and Campagnolo, 2021).

The motivations behind the desire to establish sustainability governance matured when the company started to think about the sustainability plan and when top management interfaced with the heads of the various departments, asking themselves how they could concretely do sustainability. Trying to answer this question, the company realized that creating an ad hoc structure with a group of people very committed with corporate sentiment would help internalize sustainability within all work mechanisms, making it a true corporate value to be pursued to ensure the company's prosperity over time. The process starts with the BoD, which has the function of pursuing sustainable success, as stated in the corporate governance code and applied to all listed firms (Per la Corporate Governance, p. 8). The BoD oversees the final decisions regarding firm strategy, both from business and sustainability points of view. It is composed of seven members, two of whom are executive directors, one is a non-executive director, and four are independent directors. SIT's Board of Directors pursues sustainable success by structuring itself internally and influencing the activities of the company's management team. Thus, the board of directors has delegated some advisory competences to the internal Risk Control & Sustainability Committee. The Risk Control & Sustainability Committee is a direct expression of the board of directors, having specific responsibilities.

It is composed of three non-executive directors with full independence of judgment and a keen awareness of ESG issues, who can guide ESG strategies and put their expertise at the firm's service.

It is constituted to support the BoD' evaluations and decisions related to (i) the internal control and risk management system, (ii) the approval of periodic financial reports, and (iii) sustainability, to be understood as the company's set of processes, initiatives and activities concerning the environmental, social and other aspects of its business and its dynamics of interaction with stakeholders.

GRSO itself in this regard said that:

"*Following the decisions made in 2019, in 2021, since we did not consider the Risk Control and Sustainability Committee to be fully involved in the management logic and sustainability activities of the company, it was decided to create a dedicated sustainability governance, which was then deliberated and approved in board of directors meeting*" (GRSO, Interview B).

Establishing a sustainability governance, reporting to the Corporate Sustainability Director (CSD), a managing director with specific ESG expertise, is certainly one of the key steps in this path taken by the firm.

In this case, the CSD emphasized that:

"*I'm a member of the board of directors but I'm not within the risk and sustainability committee, and this has made one created precisely an ad hoc structure and figure with specific powers*" (CSD, Interview A).

The Corporate Sustainability Director, therefore, was given specific proxies and powers, ranging from managing the budget to interacting with stakeholders and coordinating all bodies related to Sustainability Governance. This ad hoc instituted figure was the actual interface between the board of directors and the corporate management. However, this entire flow remained under the supervision of the Risk Control & Sustainability Committee, which intervened periodically for issues mainly related to the budget and the sustainability plan. Up to this point, the first stream of Sustainability Governance was structured: the Board of Directors dictated the guidelines and made the main decisions regarding sustainability, validating the relevant strategic choices of the firm because they were directly synergistic with the business ones. The Corporate Sustainability Director periodically reported to the Risk Control & Sustainability Committee on the progress of the sustainability initiatives and any critical issues if they arose and monitored the progress of the sustainability plan. Then the committee reported all the received information to the Board of Directors, who ultimately decided whether or not to promote the proposed initiatives and communicated the decisions made to the entire organization.

The CSD represents a key linking figure within the flow of information on sustainability because it relates to the firm's most operational figures by taking in ideas, critical issues and new proposals and then also reports and dialogues with top management by evaluating and promoting in agreement with the BoD the initiatives deemed most suitable. Regarding the relationship with the more operational corporate figures, the second flow that was established in Sustainability Governance concerned the connections between the Corporate Sustainability Director and the company management. In fact, to support the Corporate Sustainability Director, two different teams were created: the first was the Sustainability Steering Committee.

The Sustainability Specialist (SS) who took part in the interview as well as one of the members of the Sustainability Steering Committee stated that:

"*Sustainability Steering Committee is a multi-divisional management committee headed by the Corporate Sustainability Director and responsible for defining and implementing the sustainability plan and achieving its goals, including the non-financial statement (NFS)"* (SS, Interview C).

The Sustainability Steering Committee is an expression of top line management in the most important business areas. It is composed of the business unit directors, and the chief executive officer. This Sustainability steering committee is a body that regulates and supports the activities of the CSD and also holds decision-making functions: it oversees the activities of the various sub-organizations of corporate governance, suggests changes or insights, and finally validates them.

The second team that was set up within the governance structure and below the Sustainability Steering Committee was the Sustainability Corporate team, a working group composed of many corporate figures pertaining to all the various departments and who had in their activities several points of contact with sustainability activities (these figures were, for example, the Health, Safety and Environment Manager, the sales managers, the head of strategic marketing, quality, etc.). The team would carry out the operational actions defined in the "Made to Matter" sustainability plan and report the results, including those to be included in the NFS, thus contributing to promoting a "culture of sustainability." In 2022, the firm realized that this sustainability corporate team was too large and difficult to manage and create a smaller team called the mission leaders team consisting of seven people serving as project representatives. Each was assigned specific responsibilities, such as setting policies and aims, executing projects, and reporting sustainability-related results.

Regarding the group of mission leaders, GRSO states that:

"*These people were chosen for their sensitivity to specific sustainability issues because not everyone has the same interest and focus on these issues*". (GRSO, Interview B).

CSD in this regard, added that:

"*It was decided to create key roles certainly because we needed real people who could act consciously to implement good sustainability initiatives. Therefore, people were chosen who had heart and sensitivity to these issues. They were chosen not so much on the basis of their position or degree of seniority, but for their skills and values manifested in their usual activities*" (CSD, Interview A).

Each of the seven mission leaders played a key role in developing material topics related to sustainability initiatives undertaken by the company, specifically in the areas related to "Made to Matter." The team had a flat hierarchy and adopted a multidisciplinary approach, thus providing a concrete example of a circular and innovative management model.

Finally, the sustainability governance of the group was also represented by specialized units, the so-called sustainability local units, which were set up across the organization at an international level and represented a point of reference for ESG topics and the promotion of ESG culture. They also provided the necessary data for sustainability report drafting.

The evolutionary process undergone by SIT's governance structure was fostered and desired because of the change in the company's mission and vision, which placed sustainability at the centre of its aims. The figures described above (so-called mission leaders) were established to enable clear communication at the operational and management levels of the sustainability initiatives to be implemented in the company.

The establishment of the CSD to head sustainability governance has solidified the importance of having a top figure who also sits on the board of directors and has a clear vision of both strictly financial needs and sustainability issues at the operational level. The complete structure of sustainability governance, therefore, mainly involves two decision-making and communication flows. The Corporate Sustainability Director leads the team of mission leaders; this team acts on projects and initiatives, proposes them, and periodically submits them to the Sustainability Steering Committee. After validation by the Sustainability Steering Committee, the initiatives are brought to the attention of the Risk Control & Sustainability Committee, which, together with the Corporate Sustainability Director, also reported to the Board of Directors. The Board of Directors approves, promotes, and defines more general guidelines and carries forward the entire internal organization by connecting sustainability issues with strictly business ones.

SIT Sustainability Management Control Systems and the Supporting Documentation

As of today, the planning process for business and strategic activities is integrated with sustainability activities. SIT aims to have total synergy between the two dimensions of finance and ESG. The firm starts by defining a budget, and when this is evaluated, instances related to sustainability projects and aims are also taken into consideration, thus integrating them into the forecast of expenses and investments. At the time of budgeting, the contact persons for each project, under the supervision of the mission leaders since they represent one of the managerial lines having greater weight within the individual budget items, verify what resources they need and then present the investments they deem appropriate to the Board of Directors for approval.

Considering this, the firm has moved from adopting an initial approach of looking at the business development plan that highlighted those things most pertinent to sustainability to a later approach that is now more bottom-up, in the sense that it starts with sustainability elements for defining business projects and strategies. As a result, the decision timelines between these two dimensions are also in full synergy.

Sustainability Governance, with its key business stakeholders, plays an important role in budget setting, contributing to the definition of the budget to be allocated to both sustainability and business initiatives. An equally important figure is the Risk Control & Sustainability Committee, which is entrusted with the task of periodically (on a six-monthly basis) overseeing the progress and accounting of sustainability projects: whenever the firm finds itself analyzing the performance of its business in terms of economic performance, it, in fact, also includes an analysis of sustainability performance. In addition, SIT, as a listed company, also reports its financial data to the market on a quarterly basis.

Controlling and monitoring the progress of sustainability projects is an important action within the firm. Some of these projects also have significant financial implications in terms of investments and costs. These are not initiatives that travel on top of other investments of the firm but are developed in full synergy with the rest of the initiatives, and this is also reflected in the preparation of the "Made to Matter" sustainability plan. The first sustainability plan was unveiled in 2022, a three-year plan in which the company is committed to driving change toward a more sustainable and ethical world. More than 50 initiatives and projects defined based on the materiality matrix were presented; it included 11 SDGs and resource investments worth more than €8M.

The sustainability plan is structured in three areas: Made by Us, Made for Future, and Made with Care, which can be traced back to the three ESG pillars. Specifically, the "Made by Us" area focuses on sustainable economic growth and governance and deals with development and new frontiers of business. It represents the conditions required for a firm to develop, grow, and contribute to the proliferation of sustainability.

"Made for Future" is the most relevant area SIT has invested in as it encompasses both business strategy, especially product development strategy and R&D plans, and everything related to environmental management and impact. For these reasons, most resources are concentrated on projects relegated to this area.

Finally, the "Made with Care" area is also very relevant in the plan as the firm pays attention to not only the people who work internally and who are considered crucial but also to external stakeholders to extend the commitment to sustainability outside the firm's boundaries.

In addition to the sustainability plan until 2025, the company has also drafted the sustainability report. In 2018, the company, as listed, started drafting the sustainability report to comply with the new European directive. It performed a materiality analysis, first internally and then externally, to understand the relevance of sustainability issues to its stakeholders. In the light of this process, SIT then prioritized its stakeholders to be able to adequately meet all requests in due time, also based on the needs of its sector. This prioritization resulted in a relevance matrix consisting of two dimensions: relevance to SIT and stakeholders. By cross-referencing these two dimensions, the company arrived at defining the sustainability material issues to disclose.

The approach of preparing the materiality matrix was maintained from 2018 until 2022. In 2022, however, the GRI principles guiding the preparation of sustainability reports changed in terms of materiality analysis and a materiality matrix was no longer required to be created, but simply a list of the most relevant issues sorted by priority was to be prepared. As a result of these changes, a very thorough analysis was conducted to capture all the major themes, which were assessed through a dedicated risk opportunity assessment process because they are considered material if they represent both risks and opportunities that are important to the company. This assessment was defined from the standpoint of so-called double materiality.

After the assessment, the impact was scored consistently with the Enterprise Risk Management Model, applying SIT's Risk Scoring Scale ranging from 1 (unlikely) to 4 (highly likely). Each impact was given a score that, added to that obtained from the context analysis, determined an overall score. The analysis of double materiality thus prepared was first presented to the Risk Control & Sustainability Committee and then finally approved by SIT's Board of Directors. Subsequently, to further confirm the soundness of the analysis performed, the company conducted an online survey by submitting it to internal (employees) and external stakeholders (customers, suppliers, shareholders, investors, and lenders). The results of the survey were analyzed by SIT's Sustainability department and presented and discussed at the Risk Control & Sustainability Committee meeting. The survey confirmed the results of the materiality analysis conducted internally, so it was not necessary to propose updates in this regard to the Board of Directors.

5. Conclusions

Through the case study analysis of SIT, an Italian manufacturing group with subsidiaries around the world, this paper has contributed significantly to the literature on sustainability governance (Zaman et al., 2020), as the case study has described in depth the process of appointment of new figures within governance and management team that are in charge of sustainability decisions and implementation. Furthermore, the study contributes to the literature on CS and sustainability management control processes (Gond et al., 2012) by highlighting how the presence of formalized procedures allows the company to have its own sustainability objectives clear and to integrate them in business planning processes. The analysis has shown that a strong and well-structured sustainability governance, through the collaboration of various figures - each with its own well-defined role and responsibilities - enables the pursuit of sustainable success.

The case highlights the importance of the Corporate Sustainability Director as a real interface between the higher executive body (BoD) and the management of the various business units. The CSD acts as a filter in the two-way flow of communication: bottom up because he/she receives new sustainability initiatives proposed by the mission leaders and evaluates the progress of their existing practices, and top down because he/she intermediates the approval, by the BoD, of the initiatives proposed by the mission leaders to be functional to the pursuit of sustainable success. This part of the analysis responds to the first research question (RQ1).

This study shows how the identification of specific figures vested with decision-making and executive powers on sustainability issues and who can constitute a clear and balanced sustainability governance structure generates a common value and motivational system within all the company's units, making the very concept of sustainability evolve from a work burden in addition to the usual tasks to a real element to guarantee the survival and evolution of the company.

The integration of sustainability with traditional business issues at all levels of the firm cannot be effective and lasting if there is not a solid and delineated structure made up of people with specific roles and responsibilities who, moved by common values and ideals, accompany the firm every day towards the pursuit of this intent.

It also shows how a business strategy can be integrated and managed on par with a sustainability strategy. In fact, a well-delineated sustainability management mechanisms can integrate all dimensions of sustainability within the management and control processes, allowing a concrete response to the second research question defined in this study.

In managerial terms, the analysis of sustainability governance figures and the mechanisms for integrating sustainability issues into control and management processes can suggest new roles and procedures to be included in other companies equally attentive to sustainability but which have not yet organized their sustainability decision-making process. This case study can help many other managers rethink their company in better organizational and procedural terms, exploiting sustainability to their advantage.

The limitations of this study are related to the kind of analysis which can limit the generalization of the results. The choice of a single case study allows for in-depth analysis but at the same time does not allow for immediate comparison with other realities (Gaya and Smith, 2016).

Therefore, future studies could explore the role of sustainability governance and sustainability management and control systems in other organizational and territorial contexts for a comparative approach. Future developments of this research could concern the identification of further governance management and control mechanisms and tools to support the inclusion of sustainability issues in business strategies and within sustainability reporting. Another interesting future research development could concern the identification of critical aspects within the mechanisms of integrating sustainability into traditional corporate control and management procedures.

References

Adams C. A., Larrinaga-Gonzalez C. (2007), Engaging with organizations in pursuit of improved sustainability accounting and performance, *Accounting, Auditing & Accountability Journal*, 20(3), pp. 333-55. Doi: 10.1108/09513570710748535.

Aras G., Crowther D. (2008), Governance and sustainability: An investigation into the relationship between corporate governance and corporate sustainability, *Management Decision*, 46(3), pp. 433-448. Doi:10.1108/00251740810863870.

Ashrafi M., Acciaro M., Walker T. R., Magnan G. M., Adams M. (2019), Corporate sustainability in Canadian and US maritime ports, *Journal of Cleaner Production*, 220, pp. 386-397. Doi: 10.1016/j.jclepro.2019.02.098.

Bansal P., Song H. C. (2017), Similar but not the same: Differentiating corporate sustainability from corporate responsibility, *Academy of Management Annals*, 11(1), pp. 105-149. Doi:10.5465/annals.2015.0095.

Baumgartner R. J., Ebner D. (2010), Corporate sustainability strategies: sustainability profiles and maturity levels, *Sustainable Development*, 18(2), pp. 76-89. Doi: 10.1002/sd.447.

Bocken N., Short S., Rana P., Evans S. (2013), A value mapping tool for sustainable business modelling, *Corporate Governance*, 13(5), pp. 482-497. Doi: 0.1108/CG-06-2013-0078.

Comitato Corporate Governance (2020), Codice di corporate governance, Testo disponibile al sito: https://www.borsaitaliana.it/comitato-corporate-governance/codice/2020.pdf (consultato il 31.07. 2023).

Danvila del Valle I., Esteban J. M. D., Pérez Ó. L. D. F. (2019), Corporate social responsibility and sustainability committee inside the board, *European Journal of International Management*, 13(2), pp. 159-176. Doi: 10.1504/EJIM.2019.098145.

De Graaf F. J., Stoelhorst J. W. (2013), The role of governance in corporate social responsibility: Lessons from Dutch finance, *Business & Society*, 52(2), pp. 282-317. Doi: 10.1177/0007650309336451.

Della Porta A., De Luca F., Aufiero C. (2023), "Radicare" la sostenibilità nella strategia attraverso i sistemi di management control: un caso di studio relativo ad una Pmi, *Management Control*, 2, pp. 43-68. Doi: 10.3280/MACO2023-002003.

De Villiers C., Rouse P., Kerr J. (2016), A new conceptual model of influences driving sustainability based on case evidence of the integration of corporate sustainability management control and reporting, *Management Accounting, Control, and Reporting*, 136, pp. 78-85. Doi: 10.1016/j.jclepro.2016.01.107.

Ditillo A., Lisi I. E. (2016), Exploring sustainability control systems' integration: The relevance of sustainability orientation, *Journal of Management Accounting Research*, 28(2), pp. 125-148. Doi:10.2308/jmar-51469.
D'Onza G. (2022), L'orientamento delle aziende ad uno sviluppo sostenibile: quale contributo da parte dei sistemi di management e controllo? *Management Control*, 1, pp. 5-15. Doi: 10.3280/MACO2022-001001.
Dul, J., Hak, T. (2007), *Case study methodology in business research*. Routledge, pp. 1-295.
Eberhardt-Toth E. (2017), Who should be on a board corporate social responsibility committee?, *Journal of Cleaner Production*, 140, pp. 1926-1935. Doi: 10.1016/j.jclepro.2016.08.127.
Elmaghrabi M.E. (2021), CSR committee attributes and CSR performance: UK evidence, *Corporate Governance: The International Journal of Business in Society*, 21(5), pp. 892-919. Doi:10.1108/CG-01-2020-0036.
Enciso-Alfaro S.Y., García-Sánchez I. M. (2023), Corporate governance and environmental sustainability: Addressing the dual theme from a bibliometric approach, *Corporate Social Responsibility and Environmental Management*, 30(3), pp. 1025-1041. Doi: 10.1002/csr.2403.
Fiorentino R., Garzella S., Lamboglia R., Mancini D. (2016), Strategie di sostenibilità: dalle motivazioni ai sistemi di misurazione della performance, *Management Control*, 2, pp. 115-142. Doi: 10.3280/MACO2016-002006.
Formentini M., Taticchi P. (2016), Corporate sustainability approaches and governance mechanisms in sustainable supply chain management, *Journal of Cleaner Production*, 112, pp. 1920-1933. Doi: 10.1016/j.jclepro.2014.12.072.
Gaya, H. J., & Smith, E. E. (2016), Developing a qualitative single case study in the strategic management realm: An appropriate research design, *International Journal of Business Management and Economic Research*, 7(2), pp. 529-538.
Godos-Díez J. L., Cabeza-García L., Alonso-Martínez D., Fernández-Gago R. (2018), Factors influencing board of directors' decision-making process as determinants of CSR engagement, *Review of Managerial Science*, pp. 12(1), pp. 229-253. Doi: 10.1007/s11846-016-0220-1.
Gomm R., Foster P., Hammersley M. (2000), Case study method: Key issues, key texts, *Case study method*, pp. 98-115.
Gond J.P., Grubnic S., Herzig C., Moon J. (2012), Configuring management control systems: Theorizing the integration of strategy and sustainability, *Management Accounting Research*, 23, pp. 205-223. Doi: 10.1016/j.mar.2012.06.003.
Gubitta P., Campagnolo D. (2021), *A tutta SIT. Il percorso di sviluppo di un'impresa familiare: Sostenibile, innovativa, tecnologica*, pp. 1-151, Italy, McGraw-Hill Education (Italy) S.r.l.
Heidingsfelder J. (2019), Private sustainability governance in the making – A case study analysis of the fragmentation of sustainability governance for the gold sector, *Resources Policy*, 63, pp. 1-17. Doi: 10.1016/j.resourpol.2019.101462.
Hillman A.J., Keim G.D., Luce R.A. (2001), Board composition and stakeholder performance: Do stakeholder directors make a difference?, *Business & Society*, 40(3), pp. 295-315. Doi: 10.1177/000765030104000304.
Hosoda M. (2018), Management control systems and corporate social responsibility: perspectives from a Japanese small company, *Corporate Governance: The International Journal of Business in Society*, 18(1), pp. 68-80. Doi: 10.1108/CG-05-2017-0105.

Hristov I., Chirico A., Ranalli F., Camilli R. (2022), La pianificazione della sostenibilità nelle aziende familiari: il ruolo dei key value drivers, *Management Control*, 3, pp. 109-134. Doi: 10.3280/MACO2022-003006.

https://www.sitcorporate.it/.

https://www.sitcorporate.it/sostenibilita/governance-e-compliance/.

https://www.sitcorporate.it/sostenibilita/introduzione/.

https://www.sitcorporate.it/sostenibilita/made-to-matter/.

https://www.sitcorporate.it/sostenibilita/materiali-a-supporto/.

Landrum N. E. (2018), Stages of corporate sustainability: Integrating the strong sustainability worldview, *Organization & Environment*, 31(4), pp. 287-313. Doi: 10.1177/1086026617717456.

Lankoski L. (2016), Alternative conceptions of sustainability in a business context, *Journal of Cleaner Production*, 139, pp. 847-857. Doi: 10.1016/j.jclepro.2016.08.087.

Lee M.D. (2011), Configuration of external influences: The combined effects of institutions and stakeholders on corporate social responsibility strategies, *Journal of Business Ethics*, 102(2), pp. 281-298. Doi: 10.1007/s10551-011-0814-0.

Liu X., Zhang C. (2017), Corporate governance, social responsibility information disclosure, and enterprise value in China, *Journal of Cleaner Production*, 142(2), pp. 1075-1084. Doi: 10.1016/j.jclepro.2016.09.102.

López-Arceiz F. J., del Río C., Bellostas A. (2022), The mediating effect of sustainability strategy between sustainability committees and business performance: Can persistent assessment condition this effect?, *Sustainability Accounting, Management and Policy Journal*, 13(3), pp. 708-739. Doi: 10.1108/SAMPJ-06-2021-0193.

Lu L. W. (2021), The moderating effect of corporate governance on the relationship between corporate sustainability performance and corporate financial performance, *International Journal of Disclosure and Governance*, 18(3), pp. 193-206. Doi: 10.1057/s41310-020-00099-6.

Maas K., Schaltegger S., Crutzen N. (2016), Integrating corporate sustainability assessment, management accounting, control, and reporting, *Journal of Cleaner Production*, 136, pp. 237-248. Doi: 10.1016/j.jclepro.2016.05.008.

Mackenzie C. (2007), Boards, incentives and corporate social responsibility: The case for a change of emphasis, *Corporate Governance: An International Review*, 15(5), pp. 935-943. Doi: 10.1111/j.1467-8683.2007.00623.x.

Maraghini M. P. (2018), Management Control: il "gattopardo" per il governo aziendale, *Management Control*, 3, pp. 5-11. Doi: 10.3280/MACO2018-003001.

Marchi L. (2020), Dalla crisi allo sviluppo sostenibile. Il ruolo dei sistemi di misurazione e controllo, *Management Control*, 3, pp. 5-16. Doi: 10.3280/MACO2020-003001.

Merchant K., Riccaboni A. (2001), *Il controllo di gestione*, McGraw-Hill Companies.

Michelon G., Parbonetti A. (2012), The effect of corporate governance on sustainability disclosure, *Journal of Management & Governance*, 16(3), pp. 477-509. Doi: 10.1007/s10997-010-9160-3.

Molinari M., Maraghini M. P., Riccaboni A. (2021), Reporting di Sostenibilità e Controllo Manageriale: L'esperienza di Edison SpA, *Management Control*, 2, pp. 61-86. Doi: 10.3280/MACO2021-002004.

Newig J., Voss J. P., Monstadt J. (2007), Governance for sustainable development in the face of ambivalence, uncertainty and distributed power: An introduction, *Journal of Environmental Policy & Planning*, 9(3-4), pp. 185-19. Doi: 10.1080/15239080701622832.

Njie, B., & Asimiran, S. (2014). Case study as a choice in qualitative methodology. *Journal of research & method in Education*, 4(3), 35-40.

Olivotto L. (2022), Verso la trasformazione sostenibile dell'azienda, *Management Control*, 1, pp. 17-30. Doi: 10.3280/MACO2022-001002.
Orazalin N., Mahmood M. (2021), Toward sustainable development: board characteristics, country governance quality, and environmental performance, *Business Strategy and the Environment*, 30(8), pp. 3569-3588. Doi: 10.1002/bse.2820.
Owen D. (2008), Chronicles of wasted time? A personal reflection on the current state of, and future prospects for, social and environmental accounting research, *Accounting, Auditing & Accountability Journal*, 21(2), pp. 240-67. Doi: 10.1108/09513570810854428.
Pucheta-Martínez M. C., Gallego-Álvarez I. (2019), An international approach of the relationship between board attributes and the disclosure of corporate social responsibility issues, *Corporate Social Responsibility and Environmental Management*, 26(3), pp. 612-627. Doi: org/10.1002/csr.1707.
Rehman Khan M., Rehman Khan H. U., Ghouri A. M. (2022), Corporate social responsibility, sustainability governance and sustainable performance: A preliminary insight, *Asian Academy of Management Journal*, 27(1), pp. 1-28.
Ricart J.E., Rodrìgues M.A., Sanchez P. (2005), Sustainability in the board room: an empirical examination of Dow Jones sustainability world index leaders, *Corporate Governance: The International Journal of Business in Society*, 5(3), pp. 24-41. Doi: 10.1108/14720700510604670.
Ritchie J., Lewis J., Nicholls C. M., Ormston R. (Eds.) (2013), *Qualitative research practice: A guide for social science students and researchers*, Sage Publication Ltd, London.
Schaefer A., Williams S., Blundel R. (2018), Individual values and SME environmental engagement, *Business and Society*, 59(4), pp. 642-675. Doi: 10.1177/000765031775013.
Schaltegger S., Burritt R. (2005), Corporate sustainability, In Folmer, H., Tietenberg, T. (eds.), *International Yearbook of Environmental and Resource Economics 2005/06: A Survey of Current Issues*, Cheltenham, UK, Edward Elgar Publishing.
Schaltegger S., Lüdeke-Freund F., Hansen E. G. (2012), Business cases for sustainability: The role of business model innovation for corporate sustainability, *International Journal of Innovation and Sustainable Development*, 6(2), pp. 95-119. Doi: 10.1504/IJISD.2012.046944.
Schrobback P., Meath C. (2020), Corporate sustainability governance: Insight from the Australian and New Zealand port industry, *Journal of Cleaner Production*, 255, pp. 1-12. Doi: 10.1016/j.jclepro.2020.120280.
Shahab Y., Ntim C.G., Chengang Y., Ullah F., Fosu S. (2018), Environmental policy, environmental performance, and financial distress in China: Do top management team characteristics matter?, *Business Strategy and the Environment*, 27(8), pp. 1635-1652. Doi: 10.1002/bse.2229.
Siggelkow N. (2007), Persuasion with case studies, *Academy of Management Journal*, 50(1), pp. 20-24. Doi: 10.5465/amj.2007.24160882.
Spence L. J. (2016), Small business social responsibility: Expanding core CSR theory, *Business and Society*, 55(1), pp. 23-55. Doi: 10.1177/0007650314523256.
Taticchi P., Tonelli F., Pasqualino R. (2013), Performance measurement of sustainable supply chains: A literature review and a research agenda, *International Journal of Productivity and Performance Management*, 62(8), pp. 782-804. Doi: 10.1108/IJPPM-03-2013-0037.
Uyar A., Karaman A.S., Kilic M. (2020), Is corporate social responsibility reporting a tool of signaling or greenwashing? Evidence from the worldwide logistics sector, *Journal of Cleaner Production*, 253, pp. 1-13. Doi: 10.1016/j.jclepro.2020.119997.
Uyar A., Kuzey C., Kilic M., Karaman A.S. (2021), Board structure, financial performance, corporate social responsibility performance, CSR committee, and CEO duality:

Disentangling the connection in healthcare, *CSR and Environmental Management*, 28(6), pp. 1730-1748. DOI: 10.1002/csr.2141.

Van Marrewijk M. (2003), Concepts and definitions of CSR and corporate sustainability: Between agency and communion, *Journal of Business Ethics*, 44(2), pp. 95-105. Doi: 10.1023/A:1023331212247.

Velte P. (2016), Women on management board and ESG performance, *Journal of Global Responsibility*, 7(1), pp. 98-109. Doi: 10.1108/JGR-01-2016-0001.

Voß J. P., Bornemann B. (2011), The politics of reflexive governance: Challenges for designing adaptive management and transition management, *Ecology and Society*, 16(2), pp.1-24.

Williamson O.E. (2010), Transaction cost economics: The natural progression, *American Economic Review*, 100(3), pp. 673-690. Doi: 10.1257/aer.100.3.673.

Windsor D. (2006), Corporate social responsibility: Three key approaches, *Journal of Management Studies*, 43(1), pp. 93-114. Doi: 10.1111/j.1467-6486.2006.00584.x

Yin R.K. (2003), Designing case studies, *Qualitative Research Methods*, 5(14), pp. 359-386.

Yin R.K. (2018), *Case study research design and methods* (6th Ed.), Thousand Oaks, CA, Sage Publishing.

Zaman R., Jain T., Samara G., Jamali D. (2020), Corporate governance meets corporate social responsibility: Mapping the interface, *Business & Society*, 61(3), pp. 690-752. Doi: 10.1177/0007650320973415.

Bitter Sweet Symphony? Insights into the discrepancy between managers and organizations towards ESG

Rosanna Spanò[*], *Ilaria Martino*[*], *Flavio Spagnuolo*[*], *Alessandra Allini*[*]

Received: 28 November 2023
Accepted: 20 March 2024

Abstract

The aim of this paper is to explore whether any discrepancy between individuals' cultural understanding and perceptions concerning ESG and the organizational cultural posture towards ESG is likely to arise, and what individual's characteristics may influence it. The study relies on Habermas' theory of Communicative Action, mobilizing the conceptualizations of anomie, to analyze data gathered through a survey answered by 136 Italian managers acting in highly ESG-exposed industries. Our results give evidence of the existence of ESG orientation discrepancy and suggest that certain individuals' characteristics such as age, job grade, and tenure influence its magnitude. The study contributes to ESG literature offering empirical ground for crucial yet overlooked issues relating to the role of individuals in ESG organizational processes change. Also, it has relevant implications for both companies and policymakers, pushing reflections on the need to avoid discrepancies toward more effective ESG practices.

Keywords: ESG, discrepancy, managers, individuals, organizations, perception.

1. Introduction

This study acknowledges that accounting literature has addressed mostly ESG performance and disclosure issues, while limitedly dealing with ESG and ESG accountability as an organizational process. Also, accounting literature has overlooked the focus on individuals' awareness and perceptions on ESG and the importance of cultural alignment on these themes inside organizations, even though these are a potentially relevant lever to making ESG

[*] University of Napoli "Federico II", Department of Economics, Management, Institutions. Corresponding author: rosanna.spano@unina.it.

actions substantive and effective. Indeed, as organizations increasingly recognize the imperative of aligning their strategies with sustainable and ethical principles (Bebbington & Larrinaga, 2014), the role of their ESG orientation has gained prominence. However, an intriguing dimension within this paradigm is the potential discrepancy that may exist between ESG orientation of managers and the organizations they work in. The relevance of such concern arises as organizations' actions are explicated via managers and employees, and any such misalignment may pose challenges to achieving organizations' ethical goals (Schaltegger *et al.*, 2015). Moreover, it is worth noting that managers' practices and behaviors also impact stakeholder perceptions, investor relations, and the overall corporate reputation (Pham & Kim, 2019). Nevertheless, while numerous studies have explored the broader landscape of ESG integration in general and its impact on corporate performance (Mulki *et al.*, 2008; Agostini *et al.*, 2022; Arvidsson and Dumay, 2022; Demartini and Pagliei, 2023), the examination of how managerial perspectives may diverge from organizational ESG priorities remains an unresolved issue.

We aim to fill this gap in the literature examining whether 1) any discrepancy between individuals' cultural understanding and perceptions concerning ESG and the organizational cultural posture towards ESG are likely to arise, and 2) what individual's characteristics may influence it. In particular, to address our aim, the paper relies upon a theoretical framework of Middle Range Theory (MRT) developed by Broadbent and Laughlin (2013) and derived from Habermas' theory of communicative action (1984), especially leveraging the concept of *anomie* (i.e., misalignments between social norms and behaviors). This framework is employed to interpret data collected employing a Likert-scale questionnaire spread across 136 Italian managers dealing with ESG-related tasks in the period January-June 2023. Specifically, our analyses rely on t-test and ANOVA test to find out statistical significance 1) in the existence of ESG orientations' discrepancy between managers and organizations and 2) in variation of such ESG discrepancy according to managers' characteristics.

Unfolding the above-cited anomie, the findings reveal that ESG orientations discrepancy exists, and it can vary based on managers' age, job grade, and tenure, decreasing with higher job grade and tenure but increasing for younger managers. Thus, these results suggest that the *anomie* affect the ESG domain, possibly compromising substantive change while favoring more absorptive postures towards formal compliance for external legitimation. Indeed, such inferences allow us to address ESG issues highlighting their key role and suggesting that greater attention should be devoted to their empowerment and cultural engagement by firms. On this ground, the paper warns companies to strategically deal with any discrepancies to achieve effective ESG accountability for value creation purposes.

The remainder of this paper is as follows. Section 2 reviews and problematizes extant literature. Section 3 presents the theoretical framework. Section 4 describes the research design. Section 5 summarizes the findings. Section 6 provides a discussion of the findings leveraging the theoretical framework, while section 7 advances some concluding remarks and implications.

2. Assessment of prior studies

To date, even though authors acknowledge the importance of internal processes for effective ESG strategies, literature seems quite scant on the key role played by individuals to enable an effective "*ESG transition*". Considering extant evidence in prior studies, most papers focused on the firms' ESG performance (Garcia *et al.*, 2017; Giese *et al.*, 2019; Kao, 2023; Cupertino and Vitale, 2024; Galeotti *et al.*, 2024), analyzing some drivers (Crace and Gehman, 2023; La Torre *et al.*, 2021) and consequences on the financial performance (Velte, 2017; Zhou *et al.*, 2022; Chen *et al.*, 2023; Kalia and Aggarwal, 2023).

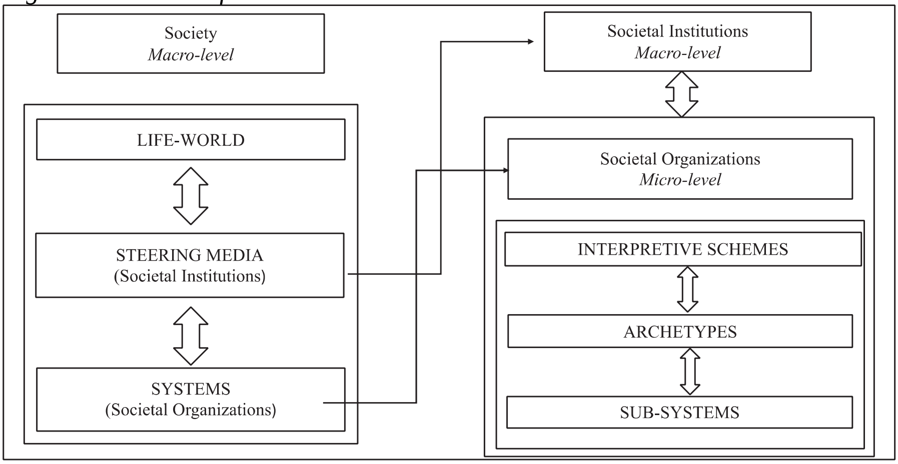
Conversely, very little has been said about the role of individuals' ESG orientation in such constantly-changing regulatory landscape, and its matching with the sustainability orientation of the organizations in which they are involved. This is, instead, a pivotal aspect to take into account (Wang *et al.*, 2016; Rodell and Lynch, 2016) on the grounds that possible discrepancy between organizations' and individuals' postures threatens the substantive formation of a unitary business culture, threatening strategic change (VanSandt and Neck, 2003). Literature highlights that such discrepancy decreases the individuals' commitment to organizational change (Mason and Mudrack, 1997) while alignment between companies' and managers' values increases firm performance and company profitability in the long term (Mulki *et al.*, 2008). Moreover, Demirtas (2015) suggests that cultural alignment within firms is crucial to better balance economic responsibilities with moral responsibilities and consequently the interests of a wide range of stakeholders. Likewise, acknowledging individuals' role in pursuing broad accountability duties within firms, other papers have recognized the relevance of assuring internal coherence and cultural alignment by paying attention to managers' personal profiles (Osagie *et al.*, 2016; Parboteeah *et al.*, 2010; Shin, 2012; Wernicke *et al.*, 2022). Recent studies, for instance, highlighted that a vast variety of personal characteristics such as age (Ortiz-de-Mandojana *et al.*, 2019), job grade (Sult *et al.*, 2023), tenure (Garcia-Blandon *et al.*, 2019), environmental awareness (Zhang *et al.*, 2015; Zhang *et al.*, 2023) and prosocial tendency (Hernandez, 2012), influence managers' cultural posture towards ESG issues. Nevertheless, and despite the primary importance of individuals as agents of change, current research still overlooks the understanding of ESG change dynamics by compelling the crucial aspects relating to individuals' awareness, perceptions, and cultural integration. Thus, in the current paper we investigate whether any discrepancy between individuals' cultural understanding and perceptions concerning ESG and the organizational cultural posture towards ESG are likely to arise, and what individual's characteristics may influence it.

3. Theoretical framework

The current paper draws from the concrete application to accounting practice of Habermas theory of Communicative action (1984), elaborated by Broadbent and Laughlin (2009, 2013) with their *Middle Range Theory* (MRT). The authors build on Habermas' concept of steering and propose that the combination of the three elements of the lifeworld (i.e. a symbolic normative context within which culture, tradition, and identity can be reproduced), systems (i.e. a functionally definable arrangement of operations, such as organizations, which represent the tangible expressions of the lifeworld), and steering media using mechanisms such as power, money, and law that steer the interaction between lifeworld and systems to ensuring that the latter reflect the former, can be observed not only at societal but also at the organizational level. Figure I provides a conceptual scheme for our theoretical framework.

A common feature of Habermas (1984) and Broadbent and Laughlin (2013) model is that they all recognize that there are circumstances in which the complexity of the systems may lead to decoupling between them and the lifeworld. Broadbent and Laughlin (2013) argue that internal colonization arises not only at the societal but also at the organizational level and theorize how accounting changes (namely design archetypes) are able to steer and make coherent (or not) the organizational lifeworld (that they label interpretive schemes) and organizational subsystems. Broadbent and Laughlin (2013) summarize the possible types of change that can be empirically recognized by applying their theorization to empirical situations.

Figure I - The MRT framework



Source: authors' own adaptation from Broadbent and Laughlin (2013)

Morphostasis (first-order change) occurs when societal steering demands are not in line with the organizational interpretive schemes. It can arise as a *rebuttal* or a *reorientation*. In the case of rebuttal, the design archetype soon tends to come back to the original state, even if an external element of disturbance initially forced a change. reorientation, instead, is a kind of change in which there is no chance for rebuttal, thus there is greater internalization, but in any case, no impact on the interpretive schemes. Empirical findings show different dynamics of reorientation. Reorientation through absorption implies that any change that is not welcomed – as it is perceived as a threat to the ethos, values, and activities of the organization – is internalized in a way that does not affect the 'real work' of the organization and its interpretive scheme but is just played in parallel with the day-to-day activities. Reorientation through boundary management arises when accounting changes forced by non-rebuttable regulatory attempts are more embedded in the organizational design and the day-to-day activities even if they do not undermine the organization's interpretive scheme. It is based on cautious acceptance of the disturbance, and strongly relies upon the specific skills of the specialist working group called to operationalize the change that may or may not want to use accounting controls as a colonizing lever, or to foster a kind of evolutionary process of change played at the periphery of the interpretive schemes.

Morphogenesis (second-order change) is a change that influences the interpretative scheme because it profoundly permeates the essence of the organization. These may alternatively occur as *colonization* or *evolution*. Colonization is a change internalized by some significant stakeholders usually seen as a failure from the perspective of the organization as a whole and as a great success by colonizers (Broadbent and Laughlin, 2013). The new interpretive schemes are the values and ethos of an authoritative minority who apply positional power and subtle tactics. Evolution involves a deliberate choice by all stakeholders in a free and open discursive exchange until a grounded consensus (Laughlin, 1987) with accounting seen as a helpful intervention.

The above-summarized framework ascribes crucial importance to the individuals within firms as actors who can effectively (or not) act towards or against any change, following the archetypes described. Indeed, this theory has been largely used to investigate how accounting as a social activity, has the potential to affect the behavior of individuals in organizations, affecting micro-practices. Fiondella *et al.* (2016) and Spanò *et al.* (2017), for instance, show how accounting changes can be enabled through individuals' engagement and how, in turn, individuals' behaviors are shaped by accounting change. Therefore, this theory has some potential to shed light on the accounting and accountability revolution following the ESG-increasing organizational focus. This theoretical focus is appropriate in answering our research questions on 1) whether any discrepancy between individuals' cultural understanding and perceptions concerning ESG and the organizational cultural posture towards ESG are likely to arise, and 2) what individual's characteristics may influence it.

Operationally, by referring to the conception of the so-called *anomie*, pathologies affecting change described by Habermas (1987), it is possible to understand if any discrepancy possibly arising has the potential to influence future organizational changing pathways. Habermas (1987, p. 183) describes the anomie as a growing sense of meaninglessness, a decrease in the lifeworld resources of shared meanings, and mutual understanding (Thomassen, 2010). According to Habermas (1987), the anomie emerge due to an overdependence of employees and citizens on the economic and political systems and their respective steering media (Bohman, 1999). The 'dependency of actors on subsystems in exchanges between system and lifeworld' leads to a loss of meaning in these interactions at the level of the person. The meaningful interaction and mutual understanding that could support the achievement of consensus are lost. Individuals come to question the legitimacy of the economic and political systems. Decision-makers seek to restore this legitimacy via steering media, however, leading to further loss of meaning and increased anomie at both societal and individual levels due to the instrumental reasoning that pervades interactions between social actors.

Although this conceptualization is particularly effective in understanding and explaining accounting change, extant studies have not yet mobilized it. Instead, we apply the concept of anomie to understand issues of discrepancy as for ESG understanding within firms, to grasp what kind of changing pathway is detectable in the Italian context under scrutiny.

More specifically, drawing from the anomie conceptual foundations and starting from the conjecture provided by VanSandt and Neck (2003) about the gaps between organizational and individual ethical standards, we try to find out whether managers are likely to perceive some discrepancy between their own ESG orientation and the ESG posture of their organizations. This is relevant for us as, following Habermas' reasoning, anomie, renewable in conceptual discrepancy around ESG orientation, may well lead to two different pathways. Specifically, if a significant amount of anomie arises from confronting people's cultural orientation within firms, this signals discrepancies that are likely to lead to what in MRT terms is understood as colonization. In this case, only an authoritative minority embraces and fosters ESG change, while the rest of the organization ideologically lags behind, with unforeseen and unpredictable effects on the ESG change effectiveness for a longer period. On the other hand, if anomie, which indicate cultural discrepancies, are not so pervasive, this indicates that the organization is more compact in the changes undertaken, which leads to more substantive acceptance and durable cultural shifts, that under the MRT is a phenomenon known as evolution. Moreover, going beyond the limitations of the extant debate, to better tap into the possible effects of anomie in the ESG domain, drawing from the research indicating individuals' characteristics as possible factors impinging ESG orientation (Hernandez, 2012; Zhang *et al.*, 2015; Li *et al.*, 2018; Ortiz-de-Mandojana *et al.*, 2019; Garcia-Blandon *et al.*, 2019; Sult *et al.*, 2023; Zhang *et al.*, 2023; Huang *et al.*, 2023; Wan *et al.*, 2023), we investigate whether discrepancy may vary according to personal characteristics of individuals, such as age, job grade, tenure.

4. Research design

The section at hand presents the research design of the study. We rely on a Likert-based survey as our primary data collection method, which allows us to gauge managers' ESG perceptions. Then, our focus shifts towards *t-test* and *ANOVA* test, which are widely used in social and accounting sciences (Abu-Bader, 2021). For the purpose of our study, these statistical techniques are both employed to reveal the significant existence of ESG discrepancy between managers and organizations and any variation of ESG discrepancy in accordance with managers' characteristics.

For clarity purposes, we explain below the survey structure, the sample composition and data collection process, the construction of our derived measures of ESG discrepancy and, lastly, our statistical modeling.

4.1 Questionnaire

We rely upon a Likert-based questionnaire (Likert, 1932), to gather data on managers' characteristics and managers' perceived ESG orientations. The questionnaire is composed of 41 questions separated into two different sections.

The first section contains questions on managers' characteristics such as age, gender, job grade, and tenure, indicated in literature as somewhat influencing factors for managers' sustainability orientation (Garcia-Blandon *et al.*, 2019; Ortiz-de-Mandojana, *et al.*, 2019; Sult *et al.*, 2023), managers' knowledge in ESG matters (ESGK) to ensure our respondents are truly involved in the topic, and a final question to assess the presence of a Head of ESG in respondents' organizations (HESG).

The second section contains questions about managers' perceived ESG orientation on the basis of constructs built from extant literature and adapted to our research context and objectives. Specifically, we rely on a set of four items to build our construct for the manager's own ESG orientation (MESGO) and manager's own E, S and G orientation (i.e., MEO, MSO, MGO). Similarly, we rely on four items to build our measure for the perception of the organization's ESG orientation (POESGO) and the perception of the organization's E, S and G orientations (i.e., POEO, POSO, POGO).

Lastly, we also include further single-item questions about the perceived sharing of ESG strategy across the entity (PESGSH), the perceived efficiency in ESG resources allocation within the organization (PESGIR), and the perceived alignment between managers and organization ESG orientation (PESGAL). Overall, each of the above items has responses ranging from 1 (minimum) to 7 (maximum). Before starting the dissemination phase, we performed an early pilot study submitting it to thirty Ph.D. students and researchers in Accounting and Management studies, as volunteer respondents. We welcomed their minor suggestions about the formal structure of certain items.

4.2 Sample and data collection

We disseminated our questionnaire among managers employed in Italian companies that operate in the Energy (i.e., Oil and gas extraction, Electric utilities), Chemicals (i.e., Chemicals and Allied products), and Mining (i.e., Metal mining, Minerals) industries. First, we analyzed these sectors as it can be assumed that cultural and educational treats are sufficiently homogenous among respondents, alleviating concerns about the chance that our analysis might be led by such other characteristics. In addition, companies operating in such sectors are highly exposed to ESG issues (Garcia *et al.*, 2017) and such circumstance enhances the relevance of our inferences.

Second, we focused on a single State to remove cross-country cultural variability that may warp our findings. Specifically, we selected Italy as the empirical setting of reference due to the increasing attention to ESG changes paid by Italian companies that – as Cucari *et al.* (2018) highlight – makes Italy a relevant setting to explore cultural issues surrounding these changes.

We selected via LinkedIn all managers working in such companies with a job title or function specialization in at least one among the following areas: risk management, financial accounting, and sustainability area. The choice of targeting such managers stems from the recognition that these operative areas are crucial for shaping business strategic actions and cultural orientation (Bhattacharya *et al.*, 2019). At inception, this process provided us with 873 managers potentially eligible for the survey.

The questionnaire was disseminated from January to June 2023, either via personal emails or social media channels (e.g., LinkedIn, Instagram, Facebook). Overall, we collected 157 responses (response rate of 17.98%). However, we withdrew 21 responses from our initial sample related to managers which indicate a relatively low knowledge about ESG issues (i.e., respondents showing ESGK lower than 5) to avoid those biased answers might affect our analysis.

Table I shows our sample composition by managers' characteristics. Our sample shows a little variation for gender, whereas it is composed of 36% (64%) of females (males). Relative to the age of managers, the mainstream is aged between 25 and 35 years old. Lastly, we obtained a regular distribution by managers' job grade [1], despite the majority of them is employed as analyst / consultant (39.71%), while 63 (13) respondents fill their role for 1-2 (10 or more) years.

Table I - Sample composition

Item	*Groups*	*n.*	*Percentage (%)*
Age	20-25	19	13.97%
	25-35	78	57.35%
	35-40	14	10.29%
	>40	25	18.38%
Gender	Male	87	63.97%
	Female	49	36.03%
	Other	0	0.00%
Job Grade	Executive	31	22.79%
	Senior director	51	37.50%
	Analyst / Consultant	54	39.71%
Tenure	1-2	63	46.32%
	3-5	36	26.47%
	6-10	24	17.65%
	>10	13	9.56%
Specialization area	Financial accounting	61	44.85%
	Risk management	35	25.74%
	Sustainability	28	20.59%
136 respondents			

Notes: Table I shows sample composition derived by 136 respondents.

4.3 ESG discrepancy measures and statistical modeling

To test the existence of ESG discrepancy, we use an approach similar to Cardillo & Harasheh (2023). The authors measure the ESG discrepancy as the difference in ESG scores between acquirers and sellers involved in M&A operations, to flush out the potential difference in their respective ESG orientations. Since in our study, we treat managers and organizations as two distinct entities, we adapted this logic to the purposes of our study.

Therefore, we employ a paired t-test analysis to directly compare the mean of our constructs related to managers' ESG orientations with the mean of matched-pair constructs related to perceived organization's ESG orientations. For instance, we match in the t-test analysis the mean on MESGO with the mean on POESGO to track the potential discrepancy on the overall ESG orientations. Similarly, we test whether there is a specific ESG dimension that particularly drives such discrepancy between managers and organizations by running a paired t-test analysis to match the mean of MEO, MSO and MGO, with the mean of POEO, POSO and POGO, respectively.

Moreover, we perform a further analysis employing the one-way ANOVA test to establish *whether* managers' perception of ESG discrepancy may vary according to certain managers' characteristics (i.e., age, job grade and tenure) that extant studies revealed to be pivotal in ESG orientation of both managers and organization (Garcia-Blandon *et al.*, 2019; Ortiz-de-Mandojana *et al.*, 2019; Sult *et al.*, 2023). In our ANOVA analysis, we directly refer to *ESG discrepancy* (*E*, *S* and *G discrepancy*) as the absolute values of the main difference between managers' and organizations' ESG orientations (*E*, *S* and *G* orientations). Lastly, we repeat a paired t-test analysis to further understand *how* varies the potential discrepancy across the abovementioned characteristics' groups.

5. Findings

5.1 Descriptive statistics

Table II shows the descriptive statistics [2] for our study. The average managers' ESG orientation is 5.96 (variance = 1.33), while their environmental and social engagement is significantly higher (MEO's mean of 6.14 and MSO's mean of 6.01, respectively) than the attention paid to governance arrangements (MGO's mean of 5.65, variance = 1.42).

Also, on average managers feel a lower ESG commitment from the companies they work for (POESGO's mean of 5.41, variance = 2.44) and such statistics keep also looking at perceived obligation in detangled E, S and G's firms' orientation.

Concerning the rest of the items, we find that in 26% of the cases, organizations have a head of ESG [3], while a relatively high value on ESGK (mean of 6.32) indicates that respondents in our sample are very confident with ESG matters. PESGIR (PESGSH) mean value is 4.86 (5.28), while the relatively low mean on PESGAL may strengthen the idea that managers perceive a certain misalignment in their own versus organizations' ethical standards.

Table II - Descriptive statistics

	Min	Max	Mean	Var
Manager ESG orientation (MESGO)	1	7	5.96	1.33
Manager E orientation (MEO)	1	7	6.14	1.34
Manager S orientation (MSO)	1	7	6.01	1.29
Manager G orientation (MGO)	1	7	5.65	1.42
Perception of Organization's ESG orientation (POESGO)	1	7	5.41	2.44
Perception of Organization's E orientation (POEO)	1	7	5.44	2.38
Perception of Organization's S orientation (POSO)	1	7	5.29	2.27
Perception of Organization's G orientation (POGO)	1	7	5.32	1.92
Head of ESG (HESG)	0	1	0.26	0.19
Manager ESG knowledge (ESGK)	1	7	6.32	1.66
Perception of ESG internal resources (PESGIR)	1	7	4.85	2.46
Perception of ESG alignment (PESGAL)	1	7	4.01	2.30
Perception of ESG sharing (PESGSH)	1	7	5.28	2.36

Notes: Table II shows descriptive statistics for a sample of 136 respondents.

5.2 Results

Results from paired t-test analysis are showed in Table III and suggest that a perceived *ESG discrepancy* between managers and organizations exists by individuals' perspective.

Indeed, the t-test analysis reveals that the difference of 0.54 between MESGO and POESGO is highly significant (t-statistics = 2.81) at 1% level. Specifically, the perceived divergence is more strongly driven by differences in environmental and social engagements, rather than by difference in governance values. Indeed, the mean difference between MEO and POEO (MSO and POSO) of 0.70 (0.71) is significantly more pronounced if compared to the difference between MGO and POGO of 0.52, which is also slightly less significant at 10%. Overall, such a result corroborates the intuition provided by VanSandt and Neck (2003) that ethical divergencies may arise within an organization as perceived by the involved individuals.

Column 2 of Table IV shows the *F-values* of ANOVA tests. Consistently with previous literature (Garcia-Blandon *et al.*, 2019; Ortiz-de-Mandojana *et al.*, 2019; Sult *et al.*, 2023), Panel A of Table IV shows that ESG discrepancy varies significantly basing on the age of the managers (p-value < 0.05). Considering each E, S and G value, we achieve less powerful (but still significant) results on E and S discrepancy (p-values < 0.10), while no statistically significant results at any conventional level on G discrepancy.

Table III - Results of t-test for existence of discrepancy in E, S and G orientations

Item	N.	Mean (st.dev.)	difference	t-statistic
Manager ESG orientation (MESGO)	136	5.96 (1.15)	0.55^{***}	2.81
Perception of Organization's ESG orientation (POESGO)	136	5.41 (1.56)		
	136			
Manager E orientation (MEO)	136	6.14 (1.16)	0.70^{***}	3.65
Perception of Organization's E orientation (POEO)	136	5.44 (1.54)		
	136			
Manager S orientation (MSO)	136	6.01 (1.14)	0.72^{***}	3.78
Perception of Organization's S orientation (POSO)	136	5.29 (1.50)		
	136			
Manager G orientation (MGO)	136	5.65 (1.19)	0.33^{*}	1.79
Perception of Organization's G orientation (POGO)	136	5.32 (1.38)		

Notes: Table III shows t-test results for a sample of 136 respondents. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Also, Panel B, Table IV suggests that ESG discrepancy is also strongly linked to the hierarchical role that managers cover in the organizations (p-value < 0.01), and coherent results hold also across the detangled E, S and G discrepancies, although the statistical significance is slightly lower (p-values < 0.05).

Complementary findings on job grade, provided by Panel C of Table IV, indicate that the overtime tenure of managers in their organization may affect the clashes in overall ethical values (p-value < 0.05) mostly driven by Environmental discrepancy issues (p-value < 0.01).

Table V gives evidence on *how* the variation in perceived ESG discrepancy varies within each characteristics group, revealing insights into this topic. Specifically, Panel A of Table V highlights that the distance in ESG involvement between individuals and organizations is significant only starting from the age of 35. The mean difference of 0.72 within the group aged between 35-40 is statistically significant at 5% (t-statistics = 1.99) and among over 40 years old managers the mean difference is even more pronounced and significant (value of 0.82, t-statistics = 2.24). For younger managers, we do not find any statistical evidence about perceived ESG discrepancy.

As highlighted by Busch *et al.* (2016), younger generations of managers recognized to be more conscious about ESG are better aligned with the recent companies' re-orientation toward ESG ethical values.

Table IV - Results of ANOVA test for differences across managers' characteristics

Panel A. ESG orientation discrepancy across *Age* groups			
	Variance between groups	**F**	**p-value**
ESG discrepancy	3.98	3.20^{**}	0.04
E discrepancy	2.62	1.99^{*}	0.06
S discrepancy	2.68	1.91^{*}	0.08
G discrepancy	1.64	1.30	0.26
Panel B. ESG orientation discrepancy across *Job Grade* groups			
	Variance between groups	**F**	**p-value**
ESG discrepancy	6.47	4.73^{***}	0.00
E discrepancy	4.72	3.16^{**}	0.04
S discrepancy	5.14	5.41^{**}	0.02
G discrepancy	4.51	2.78^{**}	0.03
Panel C. ESG orientation discrepancy across *Tenure* groups			
	Variance between groups	**F**	**p-value**
ESG discrepancy	4.70	3.15^{**}	0.04
E discrepancy	6.40	4.66^{***}	0.00
S discrepancy	1.80	1.07	0.65
G discrepancy	1.35	0.98	0.40

*Notes: Table IV shows ANOVA test results for a sample of 136 respondents. Groups' classification is defined as in Table I. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.*

Panel B of Table V shows that perceived ESG discrepancy decreases when managers cover a higher job grade in the organization. Thus, whereas the difference in ethical values is significant across all the job grade categories, we find a lower mean difference among Executive managers (mean difference of 0.45, t-statistics = 1.77) if compared with ESG discrepancy as observed by either analysts or consultants (mean difference of 0.62, t-statistics = 2.96). Coherently, Table V, Panel C, hints that the perceived distance in ethical values tends to disappear according to longer tenure, in particular after the fifth year that a manager is employed in that role in the same organization. Specifically, we do not find statistical evidence of ESG discrepancy starting from the group of managers with tenure of at least 6 years.

Table V - Results of t-test analysis for discrepancy in ESG orientations by groups

Panel A. ESG orientation discrepancy by Age				
	20-25	**25-35**	**35-40**	**>40**
	N=19	**N=78**	**N=14**	**N=25**
	Mean (standard deviation)			
Manager ESG orientation (MESGO)	6.07(0.86)	5.85(1.25)	5.57(1.27)	6.50(0.73)
Perception of Organization's ESG orientation (POESGO)	5.76(1.36)	5.33(1.63)	4.85(1.95)	5.68(1.25)
difference	*0.31*	*0.52*	*0.72*	*0.82*
t-statistic	*0.68*	*0.81*	*1.99***	*2.84****

Panel B. ESG orientation discrepancy by Job Grade			
	Executive	**Senior director**	**Analyst/ Consultant**
	N=31	**N=51**	**N=54**
	Mean (standard deviation)		
Manager ESG orientation (MESGO)	6.00(1.08)	5.86(1.28)	6.12(0.95)
Perception of Organization's ESG orientation (POESGO)	5.55(1.61)	5.26(1.57)	5.50(1.46)
difference	*0.45*	*0.60*	*0.62*
t-statistic	*1.77**	*2.92****	*2.96****

Panel C. ESG orientation discrepancy by Tenure				
	1-2	**3-5**	**6-10**	**>10**
	N=63	**N=36**	**N=24**	**N=13**
	Mean (standard deviation)			
Manager ESG orientation (MESGO)	6.01(1.33)	5.93(0.90)	5.81(0.98)	5.48(1.26)
Perception of Organization's ESG orientation (POESGO)	5.31(1.55)	5.40(1.80)	5.87(1.20)	5.16(1.47)
difference	*0.70*	*0.53*	*-0.06*	*0.32*
t-statistic	*2.64****	*2.10***	*-0.16*	*1.05*

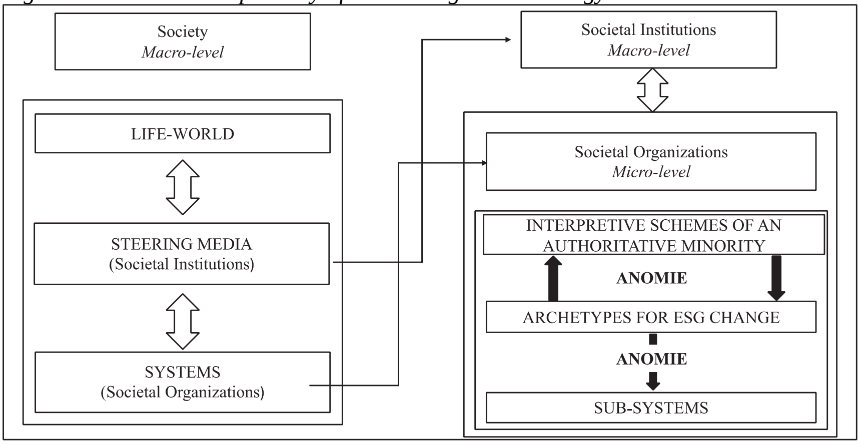
Notes: Table IV shows results of t-test for means differences in a sample of 136 respondents. Description of groups is defined as in Table I. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

As literature reveals (e.g., Glavas, 2016), job engagement is widely linked to the more aligned individuals' CSR commitment with the company in which they are involved. Moreover, our results are consistent with the phenomenon of "shared vision capability", which occurs when higher engagement provokes an identification between a firm's members and the firm's vision, mission, and core values. (Luo *et al.*, 2022).

6. Discussion

The analysis unveils interesting issues that allow us to further discuss on the topic. In fact, the results confirmed that the discrepancy between managers and organizations concerning ESG represents a relevant aspect that should be taken into account by organizations (Mason and Mudrack, 1997; VanSandt and Neck, 2003; Molki *et al.*, 2008; Demirtas, 2015). The lack of cultural agreement, which under the theory is labeled *anomie*, affects organizations especially as per the S and the E, while is less pronounced when dealing with G themes. The presence of *anomie* as per the environmental and social matters is understandable because organizations have already been under scrutiny in the past and already worked upon internal conceptual alignment surrounding governance and internal controls, while E and S dimensions have started to be internalized more recently (Adegbie and Fofah, 2016; Nalukenge *et al.*, 2018). However, what we highlight here is that from the perspective of ESG change, *anomie* may compromise firms' ability to reach substantive expectations of accountability and value creation, as the ESG paradigm should be holistically relied upon, and heterogeneous level of discrepancy/cultural alignment, impoverish its power. On this basis, we argue that *anomie* affects the ESG domain. Thus, even if the increasing commitment towards ESG can be understood as a morphogenetic change, we are still far from renewing features of an evolutionary kind of change. The degree of anomie affecting the context under scrutiny is more closely related to the circumstances known under the MRT as colonization. The cultural distance within firms is a sign of authoritative minorities that lead the change leaving no space for free and deliberate choice of participants, with a primary aim of achieving formal compliance towards external legitimation. Even though we admit that these circumstances are still fluid and changing, thus leaving some room for a slow turn into more evolutionary efforts for the foreseeable future, in any case, we should warn that if anomie persist or even increase, this could compromise an effective ESG transition, not only at the organizational level but also impinging the societal dimensions. Figure II shows how anomie affect the interrelations between design archetypes (i.e., ESG accounting change), interpretive schemes and organizational subsystems.

Figure II - Colonization pathway of ESG change in the Energy sector



Source: authors' own adaptation from Broadbent and Laughlin (2013)

Nevertheless, bearing in mind that the theoretical framework reminds us that in any circumstance additional factors can re-shape change pathways over time (Laughlin, 1987; Broadbent and Laughlin, 2009, 2013; Fiondella *et al.*, 2016; Spanò *et al.*, 2017), it is important to note that these findings are, in any case, quite comforting. Indeed, the analysis offers some basis for understanding that several characteristics such as age, job grade, tenure, influence the level of discrepancy changing its magnitude, in line with prior studies revealing the meaningful of these factors (Zhang et al., 2015; Li et al., 2018; Ortiz-de-Mandojana et al., 2019; Garcia-Blandon et al., 2019; Sult et al., 2023; Wan et al., 2023). More specifically, ESG discrepancy exists starting from age 35 (and is even more pronounced after 40 years), while it is not significant before such age; decreases with higher job grade (for executive managers the perceived ESG discrepancy is lower and less significant) and disappears over time with longer tenure (starting from the 6th year in their job position). These results suggest that there are several areas where organizations should intervene with proper actions to favor greater awareness, alliteration, and cultural coherence, by empowering the right people and turning them from resistant actors into active agents of change.

7. Conclusions

This paper moved from recognizing that in spite of the increasing contributions by academics to the debate surrounding ESG in organizations, a still overlooked area of investigation refers to the need to foster cultural alignment in organizations to making ESG and ESG-related organizational processes change substantive and effective. Hence, acknowledging the importance of individuals as change agents, the paper aimed at understanding if any discrepancy between individuals' cultural understanding and perceptions concerning ESG and the organizational cultural posture towards ESG are likely to arise, and what individual's characteristics may influence it.

To explore these issues, the research relied upon a theoretical framework developed by Broadbent and Laughlin (2013) and derived from Habermas' theory of communicative action (1984), especially leveraging the concept of *anomie*, to interpret data collected using a survey spread across 136 Italian managers dealing with ESG-related tasks in the period January – June 2023. Our main results inform that ESG orientation discrepancy between individuals and business organizations is a major issue nowadays (i.e., *anomie* are a relevant phenomenon) and that the magnitude of such divergence in ethical standards varies significantly across single E, S, and G dimensions. Moreover, we also suggest that ESG discrepancy evolves in accordance with managers' own characteristics (e.g., age, job grade and tenure).

From this perspective, this study offers a relevant theoretical contribution and important practical implications.

First, the paper allows us to address ESG issues going beyond reporting and disclosure matters, highlighting individuals' key roles and suggesting that greater attention should be devoted to their empowerment and cultural engagement by firms, as many authors claimed (VanSandt and Neck, 2003, Glavas, 2016; Kao, 2023 Schaltegger *et al.*, 2015; Pham & Kim, 2019). Hence, while we contribute to such a stream of studies, the study hopefully will fuel greater research efforts into this overlooked yet important area of inquiry, encompassing different settings and extending to more qualitative methodological approaches, with interviews and case studies useful to identify and disseminate any best practices. Moreover, it further complements extant debate leveraging Habermas Communicative Action, as it is the first empirical contribution providing empirical grounds to the concept of *anomie* and its effects on corporate change (Habermas, 1984; Broadbent and Laughlin, 2013).

Also, the paper has some practical and policy-making relevance, as it warns companies, in an ever-changing regulatory environment, to strategically deal with any discrepancies to achieve greater and effective ESG accountability for value creation purposes. In fact, it clarifies how the unclear definitional, but also operational boundaries of the E, S, and G pose challenges in terms of organizational culture, effort to interpret, convey and align organizational levels, and means to transpose shared meanings into organic strategic postures. For firms now increasingly called to deal with more or less prescriptive themes, metrics, and disclosure requirements spread in different sources and pushing multiple actions this is more than threatening, as failing to achieve internal coherence possibly endangers firms' reputation and ability to meet stakeholders' accountability expectations and value creation objectives. Moreover, the presence of ESG perceived discrepancy implies different level of commitment around ESG issues by different parts of organizations, leading to misalignment and conflicting priorities.

The paper at hand highlights that the ability to secure a strong cultural alignment towards an evolutionary ESG change has important consequences as per the dialogue between the organization and its stakeholders, being in turn reflected in materiality-related decision-making. Thus, the lack of cultural alignment in understanding and addressing ESG issues can lead to dissatisfaction among stakeholders, including investors, employees, and customers. What should be noted here is the pushing need for an adequate commitment to re-think and adapt performance management and control systems to avoid detachment and decoupling.

In conclusion, our analysis sheds light on the long pathway that still organizations have to deal with to reach an effective ESG strategy. Nevertheless, a caveat is needed before concluding as this study, although putting forth interesting issues, is not free from limitations. Indeed, overall, we make the readers aware to handle with care any evidence about perceived ESG divergency whereas such phenomenon may vary in accordance to managers' characteristics selected for the purpose of the studies. Future research could analyze what are other individual' characteristics that most influence this phenomenon. Also, to catch manager vs. organizational ESG – and E, S, G – perception, this study only included a limited number of labels. Future research could consider other ESG-related aspects that capture this dual perception. Moreover, through the questionnaires, we limit ourselves to analyzing how managers' characteristics can lead to a perceived ESG discrepancy, without analyzing other contextual factors that may have an impact on it. In this sense, future research could broaden the view by identifying possible additional factors that determine this issue. In addition, this research only considers managers of Italian companies. In the future, the research could strive to broaden the reference context to better generalize our results.

Notes

[1] We follow a hierarchical job grade classification like McNamara et al. (2017).
[2] To confirm the validity of our constructs (i.e., MESGO, MEO, MSO, MGO, POESGO, POEO, POSO, POGO), we calculate the Cronbach's alfa and the average variance extracted (AVE) values. All our constructs present values on Cronbach's alfa (AVE) strongly higher than the recommended minimum value of 0.7 (0.5).
[3] We repeated our study conditionally to a Head of ESG presence in the organizations, but we did not find any significant results.

References

Abu-Bader S.H. (2021), *Using statistical methods in social science research: With a complete SPSS guide*, Oxford University Press, USA.

Adegbie F.F., Fofah E.T. (2016), Ethics, corporate governance and financial reporting in the Nigerian banking industry: global role of International Financial Reporting Standards, *Accounting and Finance Research*, *5*(1), pp. 50-63.

Agostini M., Costa E., Korca B. (2022), Non-financial disclosure and corporate financial performance under directive 2014/95/EU: evidence from Italian listed companies, *Accounting in Europe, 19*(1), pp. 78-109.

Arvidsson S., Dumay J. (2022), Corporate ESG reporting quantity, quality and performance: Where to now for environmental policy and practice?, *Business Strategy and the Environment, 31*(3), pp. 1091-1110.

Bebbington J., & Larrinaga C. (2014), Accounting and sustainable development: An exploration, *Accounting, Organizations and Society, 39*(6), pp. 395-413.

Bhattacharya A., Misra S., Sardashti H. (2019), Strategic orientation and firm risk, *International Journal of Research in Marketing*, *36*(4), pp. 509-527.

Bohman J. (1999), International regimes and democratic governance: political equality and influence in global institutions, *International Affairs*, *75*(3), pp. 499-513.

Broadbent J., Laughlin R. (2009). Performance management systems: A conceptual model, *Management Accounting Research, 20*(4), pp. 283-295.

Broadbent J., Laughlin R. (2013), *Accounting control and controlling accounting: Interdisciplinary and critical perspectives*, Emerald Group Publishing.

Busch T., Bauer R., & Orlitzky M. (2016), Sustainable development and financial markets: Old paths and new avenues, *Business & Society*, *55*(3), pp. 303-329.

Cardillo G., Harasheh M. (2023), Stay close to me: What do ESG scores tell about the deal timing in M&A transactions?, *Finance Research Letters*, *51*, 103498.

Chen S., Song Y., Gao P. (2023), Environmental, social, and governance (ESG) performance and financial outcomes: Analyzing the impact of ESG on financial performance, *Journal of Environmental Management*, 345, 118829.

Crace L., Gehman J. (2023), What really explains ESG performance? Disentangling the asymmetrical drivers of the triple bottom line, *Organization & Environment*, 36(1), pp. 150-178.

Cucari N., Esposito De Falco S., Orlando B. (2018), Diversity of board of directors and environmental social governance: Evidence from Italian listed companies, *Corporate Social Responsibility and Environmental Management*, *25*(3), pp. 250-266.

Cupertino S., Vitale G. (2024), Exploring the nexus between corporate digitalisation and environmental sustainability: The moderating role of slack resources, *Management Control*, 1, pp. 87-108. Doi: 10.3280/MACO2024-001005.
Demirtas O. (2015), Ethical leadership influence at organizations: Evidence from the field. *Journal of Business Ethics*, *126*(2), pp. 273-284.
Demartini P., Pagliei C. (2023), Can we trust ESG Ratings? Some insights based on a bibliometric analysis of ESG data quality and rating reliability, *Management Control*, 2, pp. 161-187. Doi: 10.3280/MACO2023-002-S1008.
Fiondella C., Macchioni R., Maffei M., & Spanò R. (2016), Successful changes in management accounting systems: A healthcare case study, *Accounting Forum*, *40*(3), pp. 186-204.
Galeotti M., Lombardi R., Principale S., Sura A. (2023), Aligning Integrated Data Management with Corporate Reporting: The role of sustainability reporting, *Management Control*, 2, pp. 65-81. Doi: 10.3280/MACO2023-002-S1004.
Garcia-Blandon J., Argilés-Bosch J. M., Ravenda D. (2019), Exploring the relationship between CEO characteristics and performance, *Journal of Business Economics and Management, 20*(6), pp. 1064-1082.
Garcia A.S., Mendes-Da-Silva W., Orsato R.J. (2017), Sensitive industries produce better ESG performance: Evidence from emerging markets, *Journal of cleaner production*, *150*, pp. 135-147.
Giese G., Lee L.E., Melas D., Nagy Z., & Nishikawa L. (2019), Foundations of ESG investing: How ESG affects equity valuation, risk, and performance, *The Journal of Portfolio Management*, 45(5), pp. 69-83.
Glavas A. (2016), Corporate social responsibility and employee engagement: Enabling employees to employ more of their whole selves at work, *Frontiers in psychology*, 796.
Habermas J. (1984), *The Theory of Communicative Action. Vol. 1. Reason and the Rationalization of Society*, Boston: Beacon Press. English edition.
Habermas J. (1987), *The Theory of Communicative Action* (McCarthy, Thomas, Trans.), *Vol. I.*
Hernandez M. (2012), Toward an understanding of the psychology of stewardship. *The Academy of Management Review, 37*(2), pp. 172-193.
Huang M., Li M., Li X. (2023), Do non-local CEOs affect environmental, social and governance performance?, *Management Decision.*
Kalia D., Aggarwal D. (2023), Examining impact of ESG score on financial performance of healthcare companies, *Journal of Global Responsibility*, 14(1), pp. 155-176.
Kao F. C. (2023), How do ESG activities affect corporate performance?, *Managerial and Decision Economics*, 44(7), pp. 4099-4116.
La Torre M., Leo S., Panetta I.C. (2021), Banks and environmental, social and governance drivers: Follow the market or the authorities?, *Corporate Social Responsibility and Environmental Management*, 28(6), pp. 1620-1634.
Laughlin R.C. (1987), Accounting systems in organisational contexts: a case for critical theory, *Accounting, Organizations and Society, 12*(5), pp. 479-502.
Li Y., Gong M., Zhang X.Y., Koh L. (2018), The impact of environmental, social, and governance disclosure on firm value: The role of CEO power, *The British Accounting Review, 50*(1), pp. 60-75.
Likert R. (1932), A technique for the measurement of attitudes, *Archives of psychology*.
Luo W., Zhang C., Li M. (2022), The influence of corporate social responsibilities on sustainable financial performance: Mediating role of shared vision capabilities and moderating role of entrepreneurship, *Corporate Social Responsibility and Environmental Management*, *29*(5), pp. 1266-1282.

Mason E.S., Mudrack P.E. (1997), Do complex moral reasoners experience greater ethical work conflict?, *Journal of Business Ethics*, *16*, pp. 1311-1318.
McNamara T.K., Carapinha R., Pitt-Catsouphes M., Valcour M., Lobel S. (2017), Corporate social responsibility and employee outcomes: The role of country context, *Business Ethics: A European Review*, *26*(4), pp. 413-427.
Mulki J.P., Locander W.B., Marshall G.W., Harris E.G., Hensel J. (2008), Workplace isolation, salesperson commitment, and job performance, *Journal of personal selling & sales management*, *28*(1), pp. 67-78.
Nalukenge I., Nkundabanyanga S.K., Ntayi J.M. (2018), Corporate governance, ethics, internal controls and compliance with IFRS, *Journal of Financial Reporting and Accounting*, *16*(4), pp. 764-786.
Ortiz-de-Mandojana N., Bansal P., Aragón-Correa J. A. (2019), Older and wiser: How CEOs' time perspective influences long-term investments in environmentally responsible technologies, *British Journal of Management, 30*(1), pp. 134-150.
Osagie E.R., Wesselink R., Blok V., Lans T., Mulder M. (2016), Individual competencies for corporate social responsibility: A literature and practice perspective, *Journal of Business Ethics, 135*, pp. 233-252.
Parboteeah K.P., Chen H.C., Lin Y.T., Chen I. H., Lee A.Y., Chung A. (2010), Establishing organizational ethical climates: how do managerial practices work?, *Journal of Business Ethics*, 97, pp. 599-611.
Pham H., Kim S.Y. (2019), The effects of sustainable practices and managers' leadership competences on sustainability performance of construction firms, *Sustainable Production and Consumption*, *20*, pp. 1-14.
Rodell J.B., Lynch J.W. (2016), Perceptions of employee volunteering: Is it "credited" or "stigmatized" by colleagues?, *Academy of management Journal, 59*(2), pp. 611-635.
Schaltegger S., Beckmann M., Hansen E.G. (2013), Transdisciplinarity in corporate sustainability: Mapping the field, *Business strategy and the environment*, *22*(4), pp. 219-229.
Schaltegger S., Burritt R., Zvezdov D., Hörisch J., Tingey-Holyoak J. (2015), Management roles and sustainability information. Exploring corporate practice, *Australian Accounting Review*, *25*(4), pp. 328-345.
Shin Y. (2012), CEO ethical leadership, ethical climate, climate strength, and collective organizational citizenship behavior, *Journal of Business Ethics, 108*, pp. 299-312.
Spanò R., Caldarelli A., Ferri L., Maffei M. (2020), Context, culture and control: a case study on accounting change in an Italian regional health service, *Journal of Management and Governance, 24*(1), pp. 229-272.
Sult A., Wobst J., Lueg R. (2023), The role of training in implementing corporate sustainability: A systematic literature review, *Corporate Social Responsibility and Environmental Management*.
Thomassen L. (2010). *Habermas: A guide for the perplexed*. A&C Black.
VanSandt C.V., Neck C.P. (2003), Bridging ethics and self leadership: Overcoming ethical discrepancies between employee and organizational standards, *Journal of Business Ethics, 43*, pp. 363-387.
Velte P. (2017), Does ESG performance have an impact on financial performance? Evidence from Germany, *Journal of Global Responsibility*, 8(2), pp. 169-178.
Wan Y., Hong Z., Liu W., Cui J. (2023), Executives' Education: A Catalyst for Enhanced ESG Disclosure, *Finance Research Letters*, 104429.
Wang H., Tong L., Takeuchi R., George G. (2016), Corporate social responsibility: An overview and new research directions: Thematic issue on corporate social responsibility. *Academy of Management journal, 59*(2), pp. 534-544.

Wernicke G., Sajko M., Boone C. (2022), How much influence do CEOs have on company actions and outcomes? The example of corporate social responsibility, *Academy of Management Discoveries*, *8*(1), pp. 36-55.
Zhang B., Wang Z., Lai K.H. (2015), Mediating effect of managers' environmental concern: Bridge between external pressures and firms' practices of energy conservation in China, *Journal of Environmental Psychology, 43*, pp. 203-215.
Zhang D., Wang C., Dong Y. (2023), How does firm ESG performance impact financial constraints? An experimental exploration of the COVID-19 pandemic, *The European journal of development research, 35*(1), pp. 219-239.
Zhou G., Liu L., Luo S. (2022), Sustainable development, ESG performance and company market value: Mediating effect of financial performance, *Business Strategy and the Environment*, 31(7), pp. 3371-3387.

Advancing Induced Models of Management Accounting Change: A Dynamic Perspective

Riccardo Giannetti[*], *Lino Cinquini*[**], *Andrea Dello Sbarba*[*]

Received:10 March 2024
Accepted:01 August 2024

Abstract

This research represents a progressive evolution of the induced model for management accounting change (MAC), originally proposed by Innes and Mitchell (1990), later enriched by Cobb et al. (1995) and Kasurinen (2002). To this end, using a longitudinal case study, this research employs Lewin's (1943) force field theory to present and interpret the dynamics of contextual factors underlying the change scenario. The study makes two main contributions to the literature. First, it advances Kasurinen's (2002) MAC framework by adding three elements that incorporate a longitudinal perspective. The study acknowledges that the forces driving change differ across organizations and evolve within individual organizations over time, both in terms of nature and intensity. This underscores the need for a flexible MAC model capable of tracking these forces at any given point in time. Moreover, the findings indicate that MAC can generate new factors that further influence its progression, underscoring the importance of understanding the chain reactions triggered by change. This is crucial for effectively managing both driving and restraining forces throughout MAC's evolution. Finally, this study enhances Kasurinen's model by expanding its components. Acknowledging that human agents are the primary drivers of MAC, the refined model emphasizes the roles of organizational actors in adopting new practices, assessing information, and determining whether to continue, modify, or discontinue changes. These factors are essential for illustrating the dynamic evolution and interactions that drive organizational development and transformation. The second contribution lies in validating Kurt Lewin's force field theory within the domain of MAC. Although Lewin's framework is widely used in organizational change and management studies, its application in management accounting has been largely overlooked. This study addresses that gap by demonstrating how Lewin's framework effectively reveals how changes are initiated and managed, thereby extending the applicability of his approach to the new context.

Keywords: Management Accounting Change (MAC), Induced model, Force field theory, Budgeting system, Costing systems, Aviation industry

[*] University of Pisa, Italy. Corresponding author: riccardo.giannetti@unipi.it.
[**] Scuola Superiore Sant'Anna, Italy.

Management Control (ISSN 2239-0391, ISSNe 2239-4397), 2024, 2 – Special issue
Doi: 10.3280/MACO2024-002-S1006

Introduction

Since Hopwood's (1987, p. 207) call for further scholarly inquiry, management accounting change (MAC) has attracted a considerable amount of research interest. This extensive body of research has examined various aspects of MAC, including preconditions, change processes, and organizational consequences (Andon et al., 2007). Ittner and Larcker (2001) criticized management accounting research for leading to "*an underdeveloped body of research that fails to build on prior studies*" (p. 356). While this criticism holds merit in business disciplines (Hubbard & Vetter, 1996; Hubbard et al., 1998), significant exceptions exist in research developing explanatory frameworks enhancing the understanding of MAC (e.g., Bell et al., 2009; Greenwood, 1996; Innes & Mitchell, 1990; Waggoner et al., 1999). A notable example of these frameworks is the one proposed by Innes and Mitchell (1990), later extended by Cobb et al. (1995) and further augmented by Kasurinen (2002). Recent studies have applied this framework, emphasizing its usefulness in providing a comprehensive understanding of MAC (Bassani et al., 2021; Munir et al., 2013; Valuckas, 2019).

This study makes two key contributions. First, it advances Kasurinen's (2002) MAC framework by incorporating three elements that reflect a longitudinal perspective. Specifically, the study confirms that the forces influencing the model not only differ across organizations (Kasurinen, 2002) but also evolve over time within the same organization. These forces may vary in both nature and intensity, underscoring the need for a dynamic MAC model capable of tracking these forces at any given point in time. Additionally, the longitudinal perspective demonstrates that change can generate new factors that influence MAC, highlighting the importance of understanding chain reactions in order to effectively manage both driving and restraining forces during the process of change. Furthermore, this study addresses existing gaps by expanding the model's components, particularly focusing on the roles of organizational actors, their experiences with change (e.g., exposure to new information), and practical evaluations of information suitability, which inform decisions to continue, modify, or discontinue changes. The second contribution of this study is the validation of Kurt Lewin's (1943) force field theory within the context of MAC. Although widely applied in studies of organizational change, Lewin's framework has been largely overlooked in management accounting research. This study addresses that gap by demonstrating how Lewin's framework effectively reveals the processes through which changes are initiated and managed within MAC.

The paper is organized as follows: Section 2 reviews prior MAC research; Section 3 outlines methodology; Section 4 presents findings; Section 5 discusses results; the paper concludes by summarizing key insights.

2. Prior literature[1]

2.1 The relevance of management accounting change frameworks

An extensive body of management accounting research has investigated multiple aspects of MAC – preconditions, change processes, and organizational consequences (Andon et al., 2007). Studies on *preconditions* highlight contextual factors enabling or constraining MAC, such as competition (Hoque, 2011), organizational design (Anderson, 1995; Baines & Langfield-Smith, 2003), business strategy (Gosselin, 2011; Shields, 1995), change facilitators (Innes & Mitchell, 1990), individual traits (Anderson, 1995), technology qualities (Baines & Langfield-Smith, 2003), catalysts (Laitinen, 2001), capacity for change (Libby & Waterhouse, 1996), top management support (Shields, 1995), consultant-researchers' presence (Cooper & Crowther, 2008), and managers' prior experience (Cooper & Crowther, 2008). Moreover, institutional influences legitimize actions and define new practices (Abernethy & Chua, 1996; Covaleski et al., 1993), while both power dynamics (Amat et al., 1994) and socio-historical factors like global efficiency discourses may enhance MAC (Miller, 1991).

Research on *change* processes mainly focuses on the politics of change, factors shaping trajectory, resistance, and influential agents (Andon et al., 2007). Politics of change mainly involves power dynamics (e.g., Briers & Chua, 2001; Chua, 1995). Factors influencing trajectory generally include national culture (Chanegrih, 2008), family influence (Hiebl et al., 2013),

[1] To address the issue at hand, we initiated a comprehensive investigation using Scopus databases to identify scientific journal "articles" in "English" in the field of "Business, Management, and Accounting" published in English between 1990 and 2024. The search focused on the subject of "Management Accounting Change", encompassing the title, abstract, and/or keywords. The initial broad search yielded 119 relevant scientific articles. Subsequently, in the second phase, the preliminary selection, articles not listed in the Academic Journal Guide (2018) by Chartered ABS were excluded. The researchers then examined the titles and abstracts of the remaining articles, selecting those deemed relevant to the research questions (RQs). In the third and final step, known as the "final selection", the articles from the previous step underwent a thorough reading by the researchers. This careful evaluation led to the identification and selection of 70 articles.

learning style (Giannetti et al., 2021), leadership style (Jansen, 2011), information ambiguity (Englund et al., 2013), practice interactions (Bouten & Hoozée, 2013), institutional contradictions (Thrane & Balslev, 2017), and sustainability concerns (Arroyo, 2012). Research has also explored resistance and strategies to manage it (e.g., Granlund, 2001; Broadbent & Laughlin, 1998; Scapens & Roberts, 1993; Kasurinen, 2002), as well as the role of influential agents (e.g., Bassani et al., 2021; Bell et al., 2009).

Studies on MAC *consequences* examine its impact on organizational functioning. New accounting practices have the potential to influence performance (Hoque, 2011), cultures (Dent, 1991), identity (Abrahamsson et al., 2011), greening (Bouten & Hoozée, 2013), subgroups' identity (Taylor & Scapens, 2016), and employee satisfaction (Jansen, 2011). Accounting changes also drive strategic change by enabling new visions and setting accountability expectations (Ogden & Anderson, 1999), promoting commercially oriented accountability (Ogden, 1997), or mobilizing new practices (Revellino & Mouritsen, 2009).

One of the major criticisms of management accounting research by Ittner and Larcker (2001), endorsed by Zimmerman (2001), is that it has resulted in "*an underdeveloped body of research that fails to build on prior studies to increase our understanding of the topic*" (Ittner and Larcker, 2001: 356). While this criticism holds considerable merit in the business disciplines (Hubbard, 1996; Hubbard et al., 1998), there are significant exceptions. An exception to this is the body of research that has contributed to the development of explanatory frameworks (e.g., Innes and Mitchell, 1990; Greenwood and Hinings, 1996; Waggoner et al., 1999; Bell et al., 2009). These frameworks collectively contribute to a more comprehensive and systematic understanding of MAC, illustrating how it functions as an integrated system and demonstrating that, despite criticisms, valuable and progressive research exists in the field. One example of these frameworks is the one proposed by Innes and Mitchell (1990), later extended by Cobb et al. (1995) and further augmented by Kasurinen (2002). Recent studies have employed the framework, emphasizing its usefulness in situating their work within a more comprehensive and holistic understanding of MAC. For example, Munir et al. (2013) use Kasurinen's framework to explain performance measurement system change in a bank shifting to market competition, emphasizing investing in competent leaders. Bassani et al. (2021) integrate Kasurinen's framework with leader–follower relations theory, finding leadership disputes can intensify during MAC. Valuckas (2019) integrates Kasurinen's framework with institutional theory to investigate beyond budgeting implementation, highlighting forces impacting change and individuals' roles in overcoming barriers.

This review, in its entirety, elucidates a critical point for reflection. The endeavor to understand change in accounting discipline has given rise to various theoretical approaches and frameworks that vary in their level of analysis and angle (Modell, 2007). Some authors have focused on developing theories and models limited to one or more of various facets of MAC (i.e., precondition, change process and organizational consequence), while others have aimed to integrate all these aspects. Kasurinen's (2002) framework falls into the latter category, synthesizing multiple elements of change to offer a broad and integrated perspective on MAC (Andon et al., 2007; Soin et al., 2002). These holistic models serve as "foundational material" for more focused research efforts (Munir et al., 2013; Valuskas et al., 2013). Therefore, it is essential to develop not only narrowly focused frameworks that address one or more of these stages but also comprehensive models that encompass preconditions, processes, and consequences (Ittner and Larker, 2001). In this regard, Kasurinen's framework merits further exploration due to its integrated approach to understanding MAC.

2.2 Advancing Kasurinen's Framework

Kasurinen's (2002) model builds upon the work of Cobb et al. (1995) and Innes and Mitchell (1990) (see Figure 1). Innes and Mitchell (1990), through field studies in high-tech firms, proposed that MAC involves the interaction of three factors: motivators, catalysts, and facilitators. Motivators are ongoing positive influences that encourage change (e.g., market competition, product cost structures). Catalysts provide immediate triggers initiating change at a specific time (e.g., performance decline, loss of market share). Facilitators are enabling conditions that make change possible and practical (e.g., resource availability, staff autonomy). MAC occurs when all three factors operate concurrently. Cobb et al. (1995) expanded this model by adding three additional factors. In their study of MAC in a multinational bank, they observed barriers to change that could hinder or prevent progress (e.g., poor staff attitudes, staff turnover, shifting priorities). While motivators, catalysts, and facilitators created the potential for change, overcoming barriers was essential to realize it. Leadership emerged as critical in breaching these barriers; key individuals needed to endorse and actively implement the change. Without strong leadership, barriers could impede progress. Additionally, the bank exhibited a momentum for change embedded in its organizational culture, making barriers less likely to obstruct MAC. Kasurinen (2002) further extended the model after studying balanced scorecard implementation in a Finnish metals group. The study introduces a tripartite classification of barriers to change: confusers, which create confusion and ambiguity in understanding the change (e.g., uncertainty about the change project's organizational role and the existence of different views on the change); frustrators, which hinder progress by reinforcing resistance to change (e.g., existing organizational culture); and delayers, which slow down the change process (e.g., lack of clear-cut strategy and the inadequacy of existing information systems).

As indicated by the author, the revised MAC model provides a potential way to analyze the change context at the early stages of a project (Kasurinen, 2002). However, the model in the present form focuses on individual and discrete changes, which limits its ability to capture the continuous nature of MAC as it unfolds. To overcome this limitation, it is crucial to adopt a longitudinal approach that comprehensively tracks the evolution of MAC. This methodological shift would offer several opportunities for further, closely interconnected improvements to the existing model. Firstly, investigating shifts in influencing factors and understanding how they facilitate or hinder progress would deepen our comprehension of how the forces driving MAC change over time – a gap not yet explored (Kasurinen, 2002) – and help identify strategies to manage transitions more effectively. Secondly, recent literature emphasizes the importance of exploring how the process of change generates new factors that further shape and influence MAC (e.g., Giannetti et al., 2021; Pigatto et al., 2023; Revellino & Mouritsen, 2015). This dynamic introduces additional complexity beyond the initial factors, creating ripple effects that can accelerate or hinder change. Understanding this chain of reactions is crucial, as it offers deeper insights into the evolving forces and emerging resistance. Examining these interactions allows for more effective anticipation of challenges and management of MAC transformations. Finally, recent studies show that MAC mobilizes new knowledge, which in turn further shape and influence MAC (e.g., Giannetti et al., 2021; Pigatto et al., 2023; Revellino & Mouritsen, 2015). However, it remains unclear what new forces this mobilization generates, how they integrate with existing ones, and their effects. To address this, the model should be refined by introducing components that create circularity, allowing it to more accurately capture this ongoing process of change (Sulaiman & Mitchell, 2005).

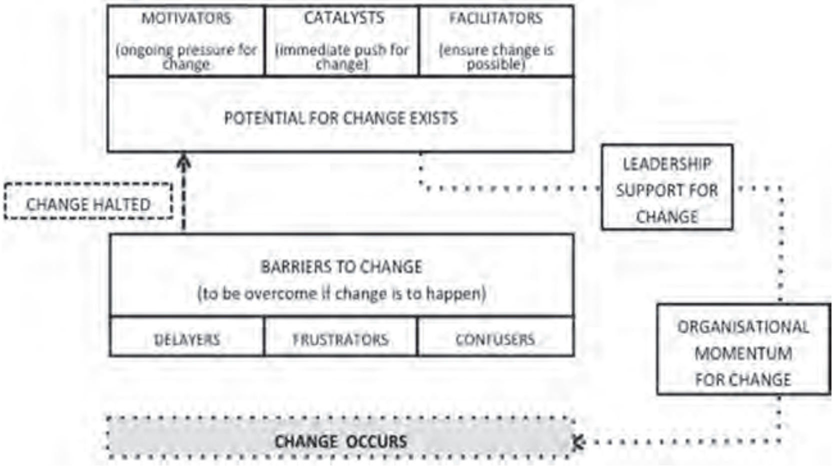
To this end, this article aims to propose an enhanced version of Kasurinen's framework that incorporates these improvements, ultimately providing a more comprehensive and dynamic tool for analyzing and managing MAC. To conceptualize and analyze MAC, this study employs Kurt Lewin's (1943) force field theory. Lewin (1890-1947) was one of the most influential psychologists of his generation (Burnes and Cooke, 2013), whose work laid the foundation for organizational change and remains central to the field today (e.g., Boje et al. 2011; Burnes 2004, 2007; Cooke 2007; Cummings and Worley 2005; French and Bell 1990). Lewin's field theory states that it is possible to understand, predict and provide the basis for changing the behavior of individuals and groups by constructing their "life space" (or situational context) comprising the (psychological) forces influencing their behavior at a given point in time (Lewin, 1943). Four main characteristics underpin Lewin's (1942, pp. 60-64) field theory. First, it is a *constructive approach* that focuses on the direct construction of concepts, theories, or solutions, rather than deriving them from pre-existing categories through abstraction. The constructive method integrates theory and practice, ensuring that concepts are immediately applicable and relevant to the specific context being studied. Secondly, it is a *psychological approach* as the identification of elements of an individual or group's situational context must be based on their perception of reality at that moment, rather than being constructed from the "*objective*" viewpoint of an observer (Lewin, 1943a). Thirdly, the situation should be analyzed *holistically*, aiming to understand it by considering all elements together rather than isolating individual aspects. Finally, this approach is *dynamic* as people and groups are viewed as behavioral systems that tend to maintain a "quasi-stationary equilibrium" (Lewin, 1947a). A shift from one quasi-stationary equilibrium to another is triggered by a change in the forces (Lewin, 1943c). Closely connected to force field theory is its three-step model of change, used to modify individual and group behaviors (Burnes, 2004; Lewin, 1947a, 1947b). This process involves three phases: unfreezing, change, and refreezing. Unfreezing prepares individuals or groups for change by rearranging forces to highlight its necessity. The change phase introduces new behaviors, which individuals or groups then experiment with and integrate. Finally, refreezing solidifies these behaviors into regular patterns, establishing a new norm. In this context, force field theory aids in mapping the complexity of the situational context, showing forces should be altered to facilitate change (Lewin, 1942).

Lewin's work has garnered substantial attention from management scholars, who have extensively utilized force field analysis to explore organizational change because it helps managers understand and manage the forces affecting change (e.g., Hughes, 2007; Gable et al., 2010; Boohene and Williams, 2012; Shrivastava et al., 2017; Swanson and Creed, 2014). In this vein, the theory has been applied across various organizational contexts, providing valuable insights into areas such as leadership dynamics (Schwering, 2003; Gable et al., 2010), organizational culture (Elsass and Veiga, 1994), Total

Quality Management (Thakkar et al., 2006), and IT implementation challenges (Bozan, 2003). However, although some researchers have touched upon its general relevance to management accounting domain (e.g., Anderson, 1995; Bruggeman & Slagmulder, 1995), its direct application remains neglected in the field. Therefore, the second aim of this study is to validate Lewin's theoretical framework within the management accounting field, shedding new light on MAC and offering a more comprehensive understanding of how such changes are implemented and managed in organizations.

Kurt Lewin's field theory, rooted in Gestalt psychology, is generally considered within the functionalist paradigm as it emphasizes individual-environment interactions and focuses on optimization and systemic equilibrium (Burnes & Cooke, 2013). However, Lewin's field theory identifies forces by analyzing the social context in which individuals or groups operate, with the mapping process shaped by their situations and perceptions. This introduces a constructivist perspective, as forces are interpreted through subjective experiences. In this vein, many management studies utilize constructivist theories, such as institutional theory (e.g., Yang et al., 2021), to identify forces. In our study, which primarily aims to identify these forces, we adopt this constructivist perspective.

Figure 1 - The current induced model of MAC by Kasurinen (2002)



3. Methodology and data gathering

3.1 Research method

The research employs the longitudinal case study methodology (Otley &

Berry, 1994; Scapens, 1990). This strategy was chosen based on several compelling factors. Firstly, one of the primary objectives of this paper is to refine existing theories by validating the effectiveness of a particular theoretical framework, specifically Lewin's (1943) force field approach (Keating, 1995). Secondly, the case study method is particularly suitable for addressing both "*how*" and "*why*" questions, which aligns with the study's focus on comprehending the mechanisms behind MAC. Thirdly, the longitudinal aspect was essential to accommodate the dynamic nature of alterations in management accounting. The chosen case company facilitated the required prolonged observation necessary for this research. Fourth, the context of the selected case study offered substantial opportunities to examine MAC, primarily because the company was initiating the development of a new management accounting system at the beginning of the study.

3.2 Situational analysis and force field analysis

This research represents a progressive evolution of the induced MAC model proposed by Kasurinen (2002). Induction involves the translation of observed data into a model or theory. The approach adopted to achieve this can range from the highly structured e.g., grounded theory with its detailed coding analyses (Corbin & Strauss, 2008) to the more subjective and interpretive (Lukka & Modell, 2010). In this study the approach adopted fell between these two extremes. As said, this study employs the force field analysis developed by Lewin (1943) as a means of representing the situational context in which MAC occurs. The forces, which are the main substance of the force field, comprise all the factors (e.g., events, circumstances and mechanisms) that influenced the change being studied. The representation of these forces involves identifying the following elements: the *name* of the force that describes the event, the circumstance, and/or the mechanism; an indication of their *direction*, being either a driving or restraining force; the *strength*, represented by arrows of differing sizes, ranked the forces as strong, medium or weak in effect on MAC; and the *type of force*, indicating whether it is a motivator, a catalyst, a facilitator, a delayer, a frustrator, or a confuser (Kasurinen, 2002). An example of this representation is shown in Appendix – Table 1 – www.sidrea.it/induced-models-accounting. Employing the force field approach as a foundation for induction ensured that there were no limitations on incorporating forces, which could have arisen from the prior adoption of a specific theoretical approach. The best application of force field analysis occurs when as many members of the organization as possible are involved in identifying the forces.

The research used a "*temporal bracketing strategy*" (Langley, 1999) to develop time-specific force fields based on major MAC. Drawing on Lewin's concept that shifts between "quasi-stationary equilibrium" occur when driving forces outweigh resisting ones (Lewin, 1943c), we interpret change stages as unfreezing, changing, and refreezing. Constructing force fields over time revealed the complexity of change, with forces significantly shifting—some emerging, others disappearing, and some varying in strength.

3.3 Data collection and analysis

The analysis of the case spanned a period of 14 years (1994-2007). The study includes both participant observation (DeWalt & DeWalt, 2002; Jorgensen, 1989) and action research (Jönsson & Lukka, 2006; Somekh, 2006; Whitehead & McNiff, 2006), with the former necessitating the researcher's close involvement with the subject, and the latter involving an active role in driving change. In particular, one researcher was actively engaged as a board member (non-executive director) within the case study organization for a period of nine years (1996-2005), while another researcher provided advisory insights during the period, assuming a more interventionist function. This approach yielded significant advantages, ensuring continuous and unfettered access to personnel and records throughout the extensive timeframe. Furthermore, it facilitated the insightful observation of numerous meetings, enabling the understanding of the underlying rationale behind high-level decisions concerning management accounting practices.

Data was primarily collected through semi-structured interviews. The research team first analyzed the enterprise's staff structures and roles, then conducted thematic interviews on specific issues. Diversified data sources complemented and cross-validated findings, minimizing common method biases and enhancing the case study's validity (Yin, 2018). Details on data collection are provided in Appendix – Table 4 - www.sidrea.it/induced-models-accounting. Concepts were thoroughly discussed and refined during research meetings, supported by corroborative data. Initial drafts by one team member were critiqued by all collaborators. This iterative process cross-referenced diverse data sources, often culminating in evidence triangulation to reinforce conclusions.

3.4 Overview of the Company's Background

The case study examines Società Aeroporto Toscano S.p.A (SAT), which manages Pisa airport's civil operations. The airport operates in essential services (e.g., air traffic control), handling, and commercial activities, each with varying regulation levels (Doganis, 1992; Graham, 2003). Incorporated in 1978 as a joint stock company with majority ownership by the local authority, SAT faced poor financial performance up to 1994, recording a loss that year.

In 1994, local authorities, regional public bodies, and private local investors injected substantial new capital, appointing a new Board of Directors and a new CEO. This marked the beginning of our case study research, which concluded in 2007. Profitability was achieved after 1995, with profits beginning that year following the previous loss. By 1996, SAT had established partnerships with low-cost airlines, leading to more structured operations and continued growth. Between 1994 and 2007, passenger volumes surged by approximately 400%, while total assets, revenues, and profits grew by 430%, 300%, and 1,600%, respectively. This expansion was driven by creating a network of European connections and launching intercontinental routes by 2007. In 2007, SAT was listed on the Milan Stock Exchange. That year, the airport handled over 3.7 million passengers, making it the sixth-largest Italian regional airport.

4. Findings

The 1994/95 period marked the emergence of a new organization with fresh ownership and management, prioritizing financial control information. From 1996 to 2007, high growth and competition shifted the focus to output cost information. Two key MAC systems were implemented: a budgeting system and an output costing system. This study examines the processes of adopting, adapting, and discarding management accounting practices, with distinct forces shaping each period and system.

4.1 Establishing the budgeting system.

This paragraph describes the process of the initial adoption and subsequent adaptation of the budgeting system, along with the driving and restraining forces that influenced both (see Appendix – Table 2 – www.sidrea.it/induced-models-accounting).

Budgeting system "adoption" (period 1994-1995). In 1993, the SAT airport faced severe financial difficulties, being on the verge of bankruptcy due to continuous losses over the preceding years (driving force 1, hereafter DF1). The significance of the airport for the local region led the local authorities and businesses to step in, infusing funds to rescue the airport from its dire state. A new Board of Directors (hereafter Board) and top management team (hereafter TMT) were appointed in 1994 to lead the turnaround effort

(DF27). Central to this change was the urgent need to enhance the airport's financial performance, which was identified as an explicit priority by the new Board and TMT. To ensure progress and financial success, the airport's ownership, through Board membership, exerted ongoing pressure on the management, demanding consistent updates on performance and recovery efforts (DF2, DF8, DF14). Consequently, there arose a distinct managerial requirement for monitoring financial information (DF3). In response, the new CEO initiated the hiring of financial experts to establish a robust budgeting system (DF4). However, due to financial constraints, the full complement of staffing envisioned could not be immediately realized (restraining force 6 and 7, hereafter RF6, RF7). New control-oriented information was considered, by the new management team, to be essential both to meet the requirements of the Board and their own managerial actions. The senior management reached consensus that prioritizing business control was the chief concern, and the means to achieve this goal was enforcing budgetary management (DF10). The new CEO had placed significant reliance on budgetary mechanisms that supported accountability-based bookkeeping in former employments. Thus, the implementation of a financial oversight system stemmed from the CEO's familiarity with this type of information (DF9). The organization was restructured to clarify individual managerial responsibilities across various areas, including line operations, commercial and marketing management, administration and financial planning, purchasing and procurement management, human resources, security, technical operations, quality management, information technology, and safety. This restructuring provided the basis for creating cost centers for each of these new areas of management responsibility. Where appropriate, these were promptly converted into profit centers (DF12). Each area manager was tasked with delivering on the ambitious company strategy (DF10). Budget-to-actual comparisons assumed central importance for management decisions and Board assessments of progress, and by 1996, monthly reports were instituted to meet this need (DF10).

Budgeting system "adaptation" (period 1996-2007). Although the aviation market experienced rapid growth in size (DF8) and the company embarked on a strategic path of growth through a cost leadership approach, it became evident that there were significant informational limitations in the budgeting process (DF25). Initially, the highly competitive nature of the aviation market (DF13) and substantial environmental uncertainty (DF16) created considerable challenges for budgeting. These factors led to a loss of credibility in the budget targets, as they became increasingly difficult to achieve and less reliable for guiding strategic decisions (RF23). To address these challenges, management decided to make substantial modifications to the budgeting process. Recognizing that the existing budgeting framework was insufficient for the rapidly changing market conditions, management introduced twice-yearly budget revisions in 1999. This adjustment aimed to improve the accuracy of financial projections and ensure that the budgeting process remained relevant and responsive to the evolving market dynamics. In addition to addressing these external pressures, the buoyant market conditions (DF8) and the ambitious growth targets set by the company (DF2) highlighted the need for effective staff incentives (DF18). The management team acknowledged that to fully capitalize on the market's growth potential, it was crucial to align employee performance with the company's strategic goals. As a result, bonuses and other financial incentives were linked to budgetary performance, incentivizing staff to achieve the financial targets and contribute to the company's growth strategy (DF11). This alignment of incentives with budgetary outcomes was intended to motivate employees and drive better performance across the organization. Moreover, management recognized that traditional accounting profit-based reports had notable shortcomings. These reports often encouraged a short-term focus and overlooked critical performance aspects (RF24). To address these issues, the company decided to incorporate new key performance indicators (KPIs) into the budgeting process. The introduction of these KPIs aimed to provide a more comprehensive and balanced view of performance, going beyond simple profit metrics. In particular, the emphasis on efficiency improvements – a key aspect of the company's strategy – led to the development of two specific KPIs with a cost base (DF14, DF20). These new KPIs were designed to measure and enhance operational efficiency, aligning with the company's focus on cost management and strategic growth objectives.

4.2 Establishing the output costing system

In 1996, another significant MAC occurred, which was prolonged and challenging unlike the previous one. Specifically, it involved the adoption, abandonment and replacement of the output costing system (see Appendix - Table 3 - www.sidrea.it/induced-models-accounting).

Output costing system "adoption" (period 1994-1996). In 1994, SAT lacked any internal knowledge or capability in output costing systems (RF5, RF6). Hiring personnel to address this deficiency proved to be a challenging task. The budgeting system was given priority, and due to limited financial resources, the finance department had to compete with HR, marketing, and technical services to secure funds for urgent hires (RF7). Nonetheless, the ongoing pressures on managers to achieve high performance levels amidst growth conditions (DF27, DF2, DF8) and to meet ambitious strategic objectives (DF11) in a competitive landscape necessitated comprehensive information on output costs. This requirement became evident through the initiatives of the established Marketing Committee. Comprising the top management team, the committee focused on achieving favorable outcomes in a rapidly expanding yet highly competitive market (DF13, DF15, DF16). One specific task assigned to this committee was to clearly define the managerial information needs (DF3, DF15), and they were also responsible for engaging external advisors (DF19). Additionally, by actively participating in pricing, customer negotiations, and efficiency optimization tasks, the committee heightened its awareness of the need for output cost information (DF8, DF11, DF13, DF14). In this vein, they established an official request for this data, outlined the management's information needs, and played a crucial role in initiating the hiring of a consulting firm in 1995. This firm was tasked with creating an Activity-Based Costing (ABC) system capable of analyzing the costs associated with each individual flight and service (DF19). The operational system that came into effect in 1996 was highly elaborate and produced actual output cost data.

Output costing system "abandonment" (period 1996-1999). Although the new costing system was operational and provided information on output costs, experience with the system revealed some limitations. Firstly, the output was complex and very detailed, leading to managerial information overload and a lack of user-friendliness, which restricted its use (RF22). Additionally, the computation of actual costs on a monthly basis involved cost driver rates that resulted from actual activity pool costs and actual cost driver volumes. Due to the significant variability of cost driver volumes from month to month and the predominantly fixed nature of airport costs, cost driver rates and cost object costs exhibited great volatility. This volatility caused managerial confusion and dissatisfaction, leading to the ABC system losing credibility among managers (RF23, RF24, RF26). Managerial dissatisfaction led to the attempt to change the ABC system (DF25). Thus, the costing system was simplified, and a few prominent flight characteristics, such as tonnage and number of seats, were used as cost drivers. While this resulted in more stable cost information, the outputs still lacked credibility for managers. For example, they knew that many flight-related costs (e.g., the substantial cost of handling services) did not depend on aircraft weight (RF23, RF24). Therefore, a further modification was attempted using capacities as a basis for cost driver rates. However, identifying and collecting capacities proved problematic (RF24), and this change, along with ABC, was finally abandoned.

Output costing system "replacement" (period 1999-2007). Despite a temporary halt due to the previous abandonment, a new impetus for developing an output costing system (focused on handling services), alongside the existing forces (DF2, DF8, DF11, DF13, DF14, DF16), came from the introduction of a new regulation (DF21). This occurred in two ways. First, the new regulation obliged the company to produce full cost information to justify the prices charged. Second, when SAT reached a particular size, it was required to open the airport to other companies offering competing handling services (DF13). Thus, computing and regularly monitoring its own handling costs became necessary to judge the competitiveness of its handling services (DF13, DF14). The initial approach was to provide incremental costs for each new flight, but it failed for technical reasons. Contracts with airlines typically last several years. However, incremental flight costs varied substantially over time, being near zero during low air traffic periods and extremely high during peak times (DF20). This extreme cost variability rendered the cost information unsuitable for managerial use (RF24). Consequently, estimates of the average actual direct costs of flights were developed and utilized. This approach had a technical deficiency as it excluded the significant overhead costs of airports (RF24). Therefore, overhead cost allocation estimates were incorporated, and the use of actual costs was eventually replaced by standard or normal costs (DF9). This provided forward-oriented cost data and the information stability that managers required.

5. Discussion of results

This is the first study that adopts Kurt Lewin's (1943) force field theory within the domain of MAC using a longitudinal case study to advance Kasurinen's (2002) induced MAC framework. In particular, the study contributes to the existing discourse on MAC in several ways. The force field analysis shows how various forces fit within the existing MAC framework. Key motivators for adopting the costing system include growth opportunities (DF8) and market competition (DF13), driving the need for better cost information to improve pricing and efficiency. Catalysts, including the owners' demands for monitoring information (DF3) and the Marketing Committee's operations (DF15), further drove performance improvements. Facilitators like hiring finance staff (DF4) and consultants (DF19) enabled budgeting and costing innovations. On the other hand, delayers (e.g., constraints on acquiring accounting staff – RF7), frustrators (e.g., presence of only financial accounting information – RF5), and confusers (e.g., lack of information credibility to management – RF23) acted as barriers to change. The new management and high stakeholder expectations (DF2, DF11) created momentum for change, sustained by ongoing growth and competition. However, comparing the force fields in different stages of MAC, it is evident that some forces disappear (e.g., the significance of a poor historical performance – DF1), while new ones emerge (e.g., regulatory requirements – DF21). Some factors grow in strength (e.g., market growth and opportunity – DF8) while others decline (e.g., owners' demands for monitoring information – DF3). Thus, while the basic structure of the model retains its validity, the composition of its constituent forces can change from one stage to another, making the model's composition time dependent. In this vein, force field theory helps the organization continuously map and understand the complexity of its situational context, adding a dynamic nature to Kasurinen's model by highlighting which forces are at play and how they drive or hinder the evolution of MAC. Furthermore, this mapping process, by classifying the forces based on their intensity, nature (e.g., social, technical, etc.), and controllability, allows for a comprehensive prioritization of interventions. These characteristics, considered collectively, enable organizations to strategically focus on managing the most relevant forces, thereby optimizing resource allocation. This approach supports a more targeted and efficient management of the forces driving or hindering MAC, fostering a more adaptive and dynamic organizational response to evolving situational contexts.

The findings also highlight another crucial aspect related to the model's dynamism. Specifically, change itself gives rise to other forces that, in turn, can stimulate or hinder further changes. This "*chain of reactions*" manifests within and across different time intervals, as well as among various MAC events. Within the same time interval, in the context of the budgeting system, the establishment of the Marketing Committee was pivotal. This committee was designed to focus on market-related forces for change, raising awareness among participants and formalizing the need for new management accounting information. Initially, it ensured that motivators and catalysts effectively triggered MAC, while the necessary facilitators were put in place to support the change. The committee later spearheaded efforts to obtain output cost information, commissioning consultants for this task. By involving top management from key functional areas, it addressed the organization-wide information needs, thereby securing consensus and authority for the proposed changes. Their seniority granted legitimacy to their decisions, positioning the committee as a formal driver of change. In summary, the committee provided essential leadership, playing a central role in initiating, implementing, and evaluating successive MACs, and thereby fostering sustained change momentum.

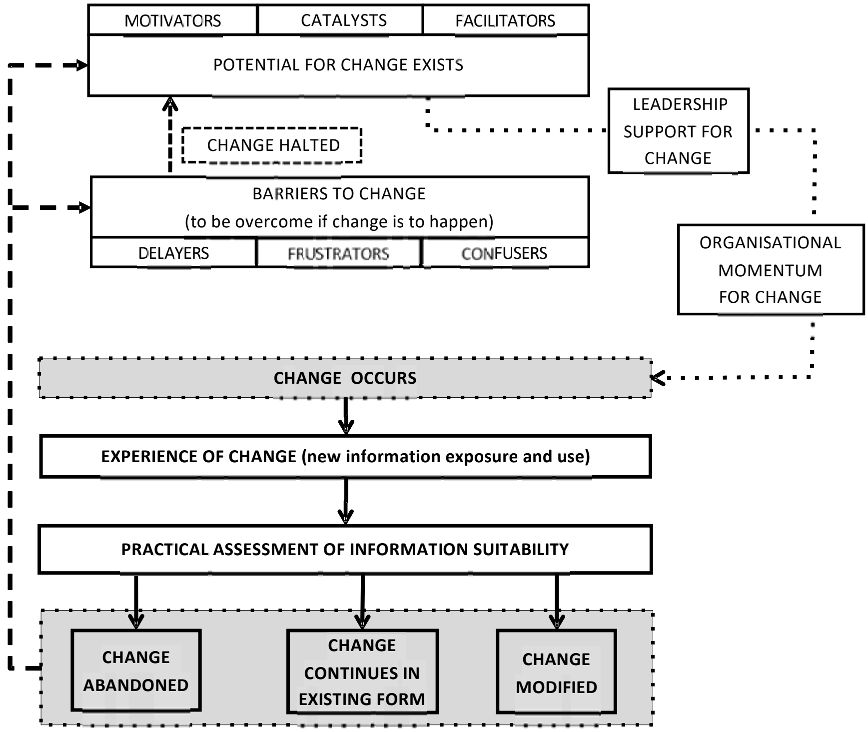
Across different intervals, the initial MAC had a significant impact, creating new forces that could either stimulate or limit future changes. A key example is the adoption and eventual abandonment of the output costing system. Pressures for high performance amid growth (DF2, DF8) and strategic objectives (DF11) demanded detailed output cost information. Despite lacking internal expertise (RF5, RF6, RF7), the Marketing Committee formally requested this data, defining information needs and hiring consultants to develop an ABC system for flight and service cost analysis. However, management found the system too complex, overly detailed, and subject to volatile cost rates. This led to new forces, such as inadequate information (DF25), prompting further changes. Additionally, issues like information credibility (RF3), difficulties in specifying needs (RF26), information overload (RF22), and technical limitations (RF24) acted as confusers and frustrators, hindering progress. Ultimately, the combination of these forces drove efforts to simplify the ABC system, which led to its complete abandonment.

Lastly, it is important to note the impact of the budgeting system on the output costing system. During the initial stage, the new CEO initiated the hiring of financial experts (facilitator) to establish a robust budgeting system (DF4). The new management team considered the control-oriented information essential to meet the requirements of the Board and support their own managerial actions. Senior management reached a unanimous consensus that prioritizing business control was the chief concern, and the way to attain this goal was through enforcing budgetary management (DF10). However, financial constraints prevented the immediate realization of the full complement of staffing envisioned. The priority given to staffing the budgeting system created financial constraints that hindered the hiring of new staff for the implementation of the output cost system, introducing a delay factor that could potentially hinder the implementation of the latter (RF7).

Finally, the employment of Kurt Lewin's (1943) field theory and three-step model played a central role in identifying another fundamentally important aspect that allows addressing the gaps identified in existing models. The case study analysis highlights how the unfreezing phase prepares the organization for change by rearranging the forces to underscore the need for change. An emblematic example of this is the establishment of the Marketing Committee, which directs managerial attention to SAT's market interface and the associated forces for change. Initially, the committee ensured that motivators and catalysts effectively initiated MAC and that the necessary facilitators were in place to implement practice changes and overcome barriers.

Following this phase, the *change* phase is where new behaviors are introduced and adopted. During this stage, individuals or groups experiment with and integrate new ways of acting and thinking. In this vein, we introduce the *experience of change*. This component focuses on how organizational actors are exposed to and use new information. This phase is crucial for several reasons. New information often challenges existing paradigms and compels organizational actors to rethink their strategies and actions (Abrahamsson et al., 2011; Ogden & Anderson, 1999). Once exposed to new information, organizational actors must interpret and utilize this data effectively. This process involves learning how to integrate new insights into existing workflows and decision-making processes. It may require developing new skills, adopting new technologies, or adjusting existing procedures to make the most out of the new information. In this process of experiencing change, the Marketing Committee has played a significant role in generating a common field, necessary for interpreting the outcomes of the change experience. The experience of change is not a passive process; organizational actors actively engage with new information and learn from the outcomes (Giannetti et al., 2021; Pigatto et al., 2023). As new information is used, feedback mechanisms come into play. Feedback helps in identifying what works well and what needs adjustment, fostering a continuous improvement process. In summary, the "*experience of change*" phase is about how new information is introduced, assimilated, and utilized within the organization. This phase is essential for understanding how change processes unfold in real-world settings and how they can be managed effectively. Finally, following the change phase, the *refreezing* phase is where the new behaviors by embedding them into regular patterns of behavior, thereby establishing the changes as the new norm. In this vein, we introduce the *practical assessment of information suitability*, and the related decision of whether the change continues in its existing form, is modified, or is abandoned. During this phase, organizational actors scrutinize the new information to determine its relevance, accuracy, and usefulness in the context of their operations and strategic goals. Based on this practical assessment, a decision is made about the future of the change process. If new information is suitable and beneficial, the new practices are maintained, as with the ABC system in 1996, which improved the airport's financial management through precise cost tracking and informed decision-making. However, if the new information is unsuitable or fails to meet expectations, the practice may be abandoned, as happened when unreliable cost data led to the abandonment of the ABC system. Alternatively, if adjustments are needed for the new information to be effective, the practice is modified, such as the costing system that was adapted several times after new regulations (Figure 2).

Figure 2 - The integration of the current induced model of MAC (source: Own work)



The relevance of these two components (i.e., experience of change and practical assessment of information suitability) is crucial, as they provide the necessary dynamism. By integrating these two elements, the model acquires a circular structure that enhances its suitability for guiding continuous change, underscoring the ongoing interaction of factors that drive organizational transformation.

6. Conclusions

This study offers two main contributions to the existing literature. The first is the revision of the existing induced model of MAC proposed by

Kasurinen (2002) (Figure 1). The results show that, in a longitudinal consideration of change, the basic structure of the model retains a good explanatory power. However, some additions are proposed that address the limitations by incorporating a dynamic perspective of MAC. By applying force field analysis (Lewin, 1943a) within a longitudinal case study, this study explores and interprets the dynamics of contextual factors in the change scenario, extending the original framework in three substantial ways. Firstly, while prior studies emphasize that the forces that populate the model differ across organizations (Cobb et al., 1995; Innes and Mitchell, 1990; Kasurinen, 2002), this study not only confirms this finding but also reveals that they change through time within the same organization, both in their nature and intensity. Thus, the existing model therefore provides a starting point and framework for deriving detailed explanations, involving organization-specific forces, of any given MAC at any given point in time. Secondly, the study also explores how change itself can lead to the emergence of new factors that further influence MAC. This underscores the need for a comprehensive, longitudinal study to capture the evolving dynamics and their impact on MAC. Understanding the chain reactions that change can trigger is crucial for monitoring both the factors driving change and the resistance throughout its evolution. Finally, this study enhances the understanding of MAC through the application of Kurt Lewin's force field theory, addressing gaps in Kasurinen's model by broadening the range of elements considered (see figure 2).

The second contribution of this article is the validation of Kurt Lewin's force field approach (1943) within the context of management accounting. Although Lewin's framework has been widely applied in organizational change studies, its specific application to management accounting has been largely overlooked. This study is the first to demonstrate how this theoretical framework can effectively illuminate key aspects of change in management accounting practices. By categorizing forces according to their intensity, nature, and controllability, Lewin's force field analysis enables a holistic prioritization of interventions. This approach enhances an organization's capacity to manage the forces influencing MAC, promoting more effective and adaptive responses to evolving conditions. Thus, this contribution not only validates Lewin's theoretical approach in a new context but also addresses a gap in the literature, enriching the discourse on organizational change by extending the applicability of the force field approach to management accounting.

This paper is the first to apply force field theory to MAC, identifying new research opportunities. Future studies could explore Lewin's approach to contemporary MAC challenges, the role of external consultants in shaping perceptions during change, and how their management accounting experiences help identify and manage change forces.

References

Abernethy M.A., Chua W.F. (1996), A Field Study of Control System "Redesign": The Impact of Institutional Processes on Strategic Choice, *Contemporary Accounting Research*, 13(2), pp. 569-606. Doi: 10.1111/j.1911-3846.1996.tb00515.x.

Abrahamsson G., Englund H., Gerdin J. (2011), Organizational identity and management accounting change, *Accounting, Auditing and Accountability Journal*, 24(3), pp. 345-376. Doi: 10.1108/09513571111124045.

Amat J., Carmona S., Roberts H. (1994), Context and change in management accounting systems: a Spanish case study, *Management Accounting Research*, 5(2), pp. 107-122. Doi: 10.1006/mare.1994.1008.

Anderson S.W. (1995), A Framework for Assessing Cost Management System Changes: The case of Activity Based Costing Implementation at General Motors, 1986-1993, *Michigan Business School Research Papers*, 9501(4), pp. 1-46.

Anderson S.W., Young S.M. (1999), The impact of contextual and process factors on the evaluation of activity-based costing systems, *Accounting, Organizations and Society*, 24(7), pp. 525-559. Doi: 10.1016/S0361-3682(99)00018-5.

Andon P., Baxter J., Chua W.F. (2007), Accounting change as relational drifting: A field study of experiments with performance measurement, *Management Accounting Research*, 18(2), pp. 273-308. Doi: 10.1016/j.mar.2006.06.007.

Arroyo P. (2012), Management accounting change and sustainability: an institutional approach, *Journal of Accounting & Organizational Change*, 8(3), pp. 286-309, Emerald Group Publishing Limited. Doi: 10.1108/18325911211258317.

Baines A., Langfield-Smith K. (2003), Antecedents to management accounting change: A structural equation approach, *Accounting, Organizations and Society*, 28(7–8), pp. 675-698. Doi: 10.1016/S0361-3682(02)00102-2.

Bassani G., Pfister J.A., Cattaneo C. (2021), Management accounting change as an amplifier of a leadership dispute: an ethnography of convergent and divergent leader–follower relations, *Accounting, Auditing and Accountability Journal*, 34(9), pp. 104-134. Doi: 10.1108/AAAJ-01-2020-4379.

Bell J., Hoque Z., Ansari S. (2009), Five easy pieces: A case study of cost management as organizational change, *Journal of Accounting & Organizational Change*, 5(2), pp. 139-167. Doi: 10.1108/18325910910963418.

Boje D., DuRant I., Coppedge K., Chambers T., Marcillo-Gomez M. (2011), *Social materiality: A new direction in change management and action research*, In Boje D., Burnes B., Hassard J. (eds), *The Routledge Companion to Organizational Change*, pp. 580-597, Routledge.

Boohene R., Williams A. (2012), Resistance to organisational change: A case study of Oti Yeboah Complex Limited, *International Business Management*, 4(1), pp. 135-145. Doi: 10.3968/j.ibm.1923842820120401.1040

Bouten L., Hoozée S. (2013), On the interplay between environmental reporting and management accounting change, *Management Accounting Research*, 24(4), pp. 333-348. Doi: 10.1016/j.mar.2013.06.005.

Bozan M.G. (2003), Using Lewin's force field analysis in implementing a nursing information system, *CIM: Computers, Informatics, Nursing*, 21(2), pp. 80-85. Doi: 10.1097/00024665-200303000-00008

Briers M., Chua W.F. (2001), The role of actor-networks and boundary objects in management accounting change: a field study of an implementation of activity-based costing, *Accounting, Organizations and Society*, 26(3), pp. 237-269. Doi: 10.1016/S0361-3682(00)00029-5.

Broadbent J., Laughlin R. (1998), Resisting the "new public management": Absorption and absorbing groups in schools and GP practices in the UK, *Accounting, Auditing & Accountability Journal*, 11(4), pp. 403-435. Doi: 10.1108/09513579810231439.

Bruggeman W., Slagmulder R. (1995), The impact of technological change on management accounting, *Management Accounting Research*, 6(3), pp. 241-252. Doi: 10.1006/mare.1995.1016.

Burnes B. (2004), Kurt Lewin and the planned approach to change: A re-appraisal, *Journal of Management Studies*, 41(6), pp. 977-1002. Doi: 10.1111/j.1467-6486.2004.00463.x.

Burnes B. (2007), Kurt Lewin and the Harwood studies: The foundations of OD, *Journal of Applied Behavioral Science*, 43(2), pp. 213-231. Doi: 10.1177/0021886306297004.

Burnes B., Cooke B. (2013), Kurt Lewin's field theory: A review and re-evaluation, *International Journal of Management Reviews*, 15(4), pp. 408-425. Doi: 10.1111/j.1468-2370.2012.00348.x.

Chanegrih T. (2008), Applying a typology of management accounting change: A research note, *Management Accounting Research*, 19(3), pp. 278-285. Doi: 10.1016/j.mar.2008.06.005.

Chua W.F. (1995), Experts, networks and inscriptions in the fabrication of accounting images: A story of the representation of three public hospitals, *Accounting, Organizations and Society*, 20(2–3), pp. 111-145. Doi: 10.1016/0361-3682(95)95744-H.

Cobb I., Helliar C., Innes J. (1995), Management accounting change in a bank, *Management Accounting Research*, 6(2), pp. 155-175. Doi: 10.1006/mare.1995.1009.

Cooke B. (2007), The Kurt Lewin/Goodwin Watson FBI files: A 60th anniversary 'there and then' of the 'here and now,' *Human Relations*, 60(3), pp. 435-462. Doi: 10.1177/0018726707076686.

Cooper S., Crowther D. (2008), The adoption of value-based management in large UK companies: A case for diffusion theory, *Journal of Applied Accounting Research*, 9(3), pp. 148-167. Doi: 10.1108/09675420810919711.

Corbin J., Strauss A. (2008), *Basics of qualitative research: Techniques and procedures for developing grounded theory* (3rd ed.), Sage.

Covaleski M.A., Dirsmith M.W., Michelman J.E. (1993), An institutional theory perspective on the DRG framework, case-mix accounting systems and health-care organizations, Accounting, Organizations and Society, 18(1), pp. 65-80. Doi: 10.1016/0361-3682(93)90025-2. 1

Cummings T.G., Worley C.G. (2005), *Organization development and change* (8th ed.), South-Western College Publishing.

Dent J.F. (1991), Accounting and organizational cultures: A field study of the emergence of a new organizational reality, *Accounting, Organizations and Society*, 16(8), pp. 705-732. Doi: 10.1016/0361-3682(91)90021-6.

DeWalt K.M., DeWalt B.R. (2002), *Participant observation: A guide for fieldworkers*, AltaMira.

Doganis R. (1992), *The Airport Business*, Routledge.

Elsass P.M., Veiga J.F. (1994), Acculturation in acquired organizations: A force-field perspective, *Human Relations*, 47(4), pp. 431-453. Doi: 10.1177/001872679404700404.

Englund H., Gerdin J., Abrahamsson G. (2013), Accounting ambiguity and structural change, *Accounting, Auditing and Accountability Journal*, 26(3), pp. 423-448. Doi: 10.1108/09513571311311883.

French W.L., Bell C.H. (1990), *Organization development* (4th ed.), Prentice Hall.

Gable S., Chyung S., Marker A., Winiecki D. (2010), How should organizational leaders use employee engagement survey data?, *Performance Improvement*, 49(4), pp. 17-25. Doi: 10.1002/pfi.20140.

Giannetti R., Cinquini L., Miolo Vitali P., Mitchell F. (2021), Management accounting change as a learning process: a longitudinal analysis, *Qualitative Research in Accounting and Management,* 18(4–5), pp. 484-515. Doi: 10.1108/QRAM-01-2017-0003.

Gosselin M. (2011), Contextual factors affecting the deployment of innovative performance measurement systems, *Journal of Applied Accounting Research*, 12(3), pp. 260-277. Doi: 10.1108/09675421111187692.

Graham A. (2003), *Managing airports: an international perspective* (2nd edition), Butterworth Heinemann.

Granlund M. (2001), Towards explaining stability in and around management accounting systems, *Management Accounting Research*, 12(2), pp. 141-166. Doi: 10.1006/mare.2000.0151.

Greenwood R., Hinings C.R. (1996), Understanding Radical Organizational Change: Bringing together the Old and the New Institutionalism, *The Academy of Management Review*, 21(4), pp. 1022-1054. Doi: 10.2307/259163.

Hiebl M.R.W., Feldbauer-Durstmüller B., Duller C. (2013), The changing role of management accounting in the transition from a family business to a non-family business, *Journal of Accounting and Organizational Change*, 9(2), pp. 119-154. Doi: 10.1108/18325911311325933.

Hopwood A.G. (1987), The archaeology of accounting systems, *Accounting, Organizations and Society*, 12(3), pp. 207-234. Doi: 10.1016/0361-3682(87)90038-9.

Hoque Z. (2011), The relations among competition, delegation, management accounting systems change and performance: A path model, *Advances in Accounting*, 27(2), pp. 266-277. Doi: 10.1016/j.adiac.2011.05.006.

Hubbard R., Vetter D.E. (1996), An empirical comparison of published replication research in accounting, economics, finance, management, and marketing, *Journal of Business Research*, 35(2), pp. 153-164. Doi: 10.1016/0148-2963(95)00084-4.

Hubbard R., Vetter D.E., Little E.L. (1998), Replication in strategic management: scientific testing for validity, generalizability, and usefulness, *Strategic Management Journal*, 19(3), pp. 243-254. Doi: 10.1002/(SICI)1097-0266(199803)19:3<243::AID-SMJ951>3.0.CO;2-0.

Hughes M. (2007), The tools and techniques of change management, *Journal of Change Management*, 7(1), pp. 37-49. Doi: 10.1080/14697010701309435.

Innes J., Mitchell F. (1990), The process of change in management accounting: some field study evidence, *Management Accounting Research*, 1(1), pp. 3-19. Doi: 10.1016/S1044-5005(90)70042-X.

Ittner C.D., Larcker D.F. (2001), Assessing empirical research in managerial accounting: a value-based management perspective, *Journal of Accounting and Economics*, 32(1–3), pp. 349-410. Doi: 10.1016/S0165-4101(01)00026-X.

Jansen E.P. (2011), The effect of leadership style on the information receivers' reaction to management accounting change, *Management Accounting Research*, 22(2), pp. 105-124. Doi: 10.1016/j.mar.2010.10.001.

Jönsson S., Lukka K. (2006), *There and Back Again: Doing Interventionist Research in Management Accounting*, In Chapman C.S., Hopwood A.G., Shields M.D. (eds), *Handbook of Management Accounting Research* (Vol. 1), Elsevier.

Jorgensen D.L. (1989), *Participant Observation: A Methodology for Human Studies*, SAGE Publications, Inc.

Kasurinen T. (2002), Exploring management accounting change: The case of balanced scorecard implementation, *Management Accounting Research*, 13(3), pp. 323-343. Doi: 10.1006/mare.2002.0191.

Keating P.J. (1995), A framework for classifying and evaluating the theoretical contribution of case research in management accounting, *Journal of Management Accounting Research*, 7, pp. 66-86.

Laitinen E.K. (2001), Management accounting change in small technology companies: Towards a mathematical model of the technology firm, *Management Accounting Research*, 12(4), pp. 507-541. Doi: 10.1006/mare.2001.0177.

Langley A. (1999), Strategies for Theorizing from Process Data, *The Academy of Management Review*, 24(4), pp. 691-710. Doi: 10.2307/259349.

Laughlin R., Broadbent J., Willig-Atherton H. (1994), Recent Financial and Administrative Changes in GP Practices in the UK: Initial Experiences and Effects, *Accounting, Auditing & Accountability Journal*, 7(3), pp. 96-124. Doi: 10.1108/09513579410064141.

Lewin K. (1942), *Field theory and learning*, In Cartwright D. (ed), *Field theory in social science: Selected theoretical papers by Kurt Lewin*, pp. 60-86, Social Science Paperbacks.

Lewin K. (1943a), *Defining the 'field at a given time,'* In Cartwright D. (ed), *Field theory in social science: Selected theoretical papers by Kurt Lewin*, pp. 43-59, Social Science Paperbacks.

Lewin K. (1943b), Forces behind food habits and methods of change, *Bulletin of the National Research Council*, 108, pp. 35-65.

Lewin K. (1943c), *Psychological ecology*, In Cartwright D. (ed), *Field theory in social science: Selected theoretical papers by Kurt Lewin*, pp. 17-187, Social Science Paperbacks.

Lewin K. (1947a), *Frontiers in group dynamics*, In Cartwright D. (ed), *Field theory in social science: Selected theoretical papers by Kurt Lewin*, pp. 188-237, Social Science Paperbacks.

Lewin K. (1947b), *Group decisions and social change*, In Newcomb T.M., Hartley E.L. (eds), *Readings in social psychology*, pp. 330-344, Henry Holt.

Lewin M. (1998), *Kurt Lewin: His psychology and a daughter's recollections*, In Kimble G.A., Wertheimer M. (eds), *Portraits of pioneers in psychology* (Vol. 3), pp. 105-120, Lawrence Erlbaum Associates.

Libby T., Waterhouse J.H. (1996), Predicting Change in Management Accounting Systems, *Journal of Management Accounting Research*, 8, pp. 137-150.

Lukka G., Modell S. (2010), Validation in interpretive management accounting research, *Accounting, Organizations and Society*, 35(4), pp. 462-477. Doi: 10.1016/j.aos.2009.10.004.

Miller D., Friesen P.H. (1984), A Longitudinal Study of the Corporate Life Cycle, *Management Science*, 30(10), pp. 1161-1183. Doi: 10.1287/mnsc.30.10.1161.

Miller P. (1991), Accounting innovation beyond the enterprise: Problematizing investment decisions and programming economic growth in the U.K. in the 1960s, *Accounting, Organizations and Society*, 16(8), pp. 733-762. Doi: 10.1016/0361-3682(91)90022-7.

Munir R., Baird K., Perera S. (2013), Performance measurement system change in an emerging economy bank, *Accounting, Auditing and Accountability Journal*, 26(2), pp. 196-233. Doi: 10.1108/09513571311303710.

Ogden S.G. (1997), Accounting for organizational performance: The construction of the customer in the privatized water industry, *Accounting, Organizations and Society*, 22(6), pp. 529-556. Doi: 10.1016/S0361-3682(96)00027-X.

Ogden S.G., Anderson F. (1999), The role of accounting in organisational change: promoting performance improvements in the privatised UK water industry, *Critical Perspectives on Accounting*, 10(1), pp. 91-124. Doi: 10.1006/cpac.1998.0200.

Otley D., Berry A. (1994), Case study research in management accounting and control, *Management Accounting Research*, 5, pp. 45-65. Doi: 10.1006/mare.1994.1004.

Pigatto G., Cinquini L., Tenucci A., Dumay J. (2023), Serendipity and management accounting change, *Meditari Accountancy Research*, 31(7), pp. 88-115. Doi: 10.1108/MEDAR-09-2021-1450.

Revellino S., Mouritsen J. (2009), The multiplicity of controls and the making of innovation, *European Accounting Review*, 18(2), pp. 341-369. Doi: 10.1080/09638180802681529.

Revellino S., Mouritsen J. (2015), Accounting as an engine: The performativity of calculative practices and the dynamics of innovation, *Management Accounting Research*, 28, pp. 31-49. Doi: 10.1016/j.mar.2015.04.005.

Scapens R.W. (1990), Researching management accounting practice: The role of case study methods, *The British Accounting Review*, 22(3), pp. 259-281. Doi: 10.1016/0890-8389(90)90008-6.

Scapens R.W., Roberts J. (1993), Accounting and control: a case study of resistance to accounting change, *Management Accounting Research*, 4(1), pp. 1-32. Doi: 10.1006/mare.1993.1001.

Schwering R.E. (2003), Focusing leadership through force field analysis: New variations on a venerable planning tool, *Leadership & Organization Development Journal*, 24(7), pp. 361-370.

Shields M.D. (1995), An Empirical Analysis of Firms' Implementation Experiences with Activity-Based Costing, *Journal of Management Accounting Research*, 7, pp. 148-166.

Shrivastava S.R., Shrivastava P.S., Ramasamy J. (2017), Force field analysis: An effective tool in qualitative research, *Journal of Current Research in Scientific Medicine*, 3(2), pp. 139-140.

Soin K., Seal W., Cullen J. (2002), ABC and organizational change: an institutional perspective, *Management Accounting Research*, 13(2), pp. 249-271. Doi: 10.1006/mare.2002.0186.

Somekh B. (2006), Action Research: A Methodology for Change and Development, *Open University Press*.

Sulaiman S., Mitchell F. (2005), Utilising a typology of management accounting change: An empirical analysis, *Management Accounting Research*, 16(4), pp. 422-437. Doi: 10.1016/j.mar.2005.03.004.

Swanson D.J., Creed A.S. (2014), Sharpening the focus of force field analysis, *Journal of Change Management*, 14(1), pp. 28-47. Doi: 10.1080/14697017.2013.788052.

Taylor L.C., Scapens R.W. (2016), The role of identity and image in shaping management accounting change, *Accounting, Auditing and Accountability Journal*, 29(6), pp. 1075-1099. Doi: 10.1108/AAAJ-10-2014-1835.

Thakkar J., Deshmukh S.G., Shastree A. (2006), Total quality management (TQM) in self-financed technical institutions: A quality function deployment (QFD) and force field analysis approach, *Quality Assurance in Education*, 14(1), pp. 54-74. Doi: 10.1108/09684880610643610.

Thrane S., Balslev L. (2017), Institutional contradictions and change of organisations and accounting: Case evidence from Greenland, *Journal of Accounting and Organizational Change*, 13(3), pp. 310-330. Doi: 10.1108/JAOC-02-2016-0009.

Vaivio J. (1999), Exploring a "non-financial" management accounting change, *Management Accounting Research*, 10(4), pp. 409-437. Doi: 10.1006/mare.1999.0112.

Valuckas D. (2019), Budgeting reconsidered: exploring change initiative in a bank, *Journal of Accounting and Organizational Change*, 15(1), pp. 100-126. Doi: 10.1108/JAOC-10-2016-0060.

Waggoner D.B., Neely A.D., Kennerley M.P. (1999), *The forces that shape organisational performance measurement systems: An interdisciplinary review*, In Int. J. Production Economics, 60.

Whitehead J., McNiff J. (2006), *All You Need To Know About Action*, SAGE Publications.

Yin R.K. (2018), *Case Study Research and Applications: Design and Methods* (6th ed.), Sage, Thousand Oaks, CA.

Zimmerman B.J. (2001), *Achieving Academic Excellence: A Self-Regulatory Perspective* (2nd ed.), Routledge.

Searching for the drivers of organizational resilience in times of crisis: An example from the Covid-19 pandemic

Federico Barnabè[*], *Riccardo Santoni*[**], *Manuel Mechi*[***]

Received: 26 November 2023
Accepted: 07 July 2024

Abstract

The theme of organizational resilience has been acquiring relevance for some time to date due to the health crises and geopolitical tensions that have marked the last years. Understanding which drivers helped ensure business continuity during such crises can subsequently help managers prepare for future challenges or shocks. Answering the call for an aggregate analysis of the drivers of organizational resilience, this study identifies three main categories: the first one focuses on the human characteristics of the business community; the second focuses on the role played by management control systems, and the third one points to the external support of consultants and stakeholders. This framework is applied to a case study of a not-for-profit organization (FASI – Fondo Assistenza Sanitaria Integrativa) that operates in the healthcare assurance sector and was strongly impacted by the Covid-19 pandemic. The results of this study reaffirm the multilevel essence of organizational resilience. In more detail, the policies adopted by the company to face different challenges led to the achievement of three different types of resilience: reactive behavior – bouncing-back to the previous equilibrium (type 1), adaptive behavior – bouncing-forward to a higher level of equilibrium (type 2), and proactive behavior – preparing for a possible future shock (type 3).

Keywords: Organizational resilience, Management control, Resilience drivers, Consultants, Crisis, Covid-19

[*] University of Siena, Department of Business and Law, Corresponding author, barnabe@unisi.it.
[**] University of Siena, Department of Business and Law, riccardo.santoni2@unisi.it.
[***] University of Siena, manuel.mechi@student.unisi.it.

Management Control (ISSN 2239-0391, ISSNe 2239-4397), 2024, 2 – Special issue
Doi: 10.3280/MACO2024-002-S1007

1. Introduction

In the last years, the world has experienced a severe concatenation of crises related to the pandemic from SARS-CoV-2 (Covid-19) and a tense world geopolitical situation. Shocks and uncertainties have undermined the functioning of the entire supply chain, requiring managers to adopt special measures to manage the crisis (Williams *et al*., 2017). In this study, particular attention is given to the catastrophic consequences generated by the Covid-19 pandemic which caused many countries to adopt lockdowns at different moments, imposed an impressive death toll on the world population, and generated severe consequences in the global economic system (e.g., Allen, 2022). In this context, companies had to adapt and innovate their business models, sometimes just to survive or regain stability (Clauss *et al*., 2022), some others to recover and change for the better (Priyono *et al*., 2020).

This ability, which the literature identifies with the concept of "organizational resilience", is at the core of this study, which is specifically aimed at searching for the drivers at the basis of this phenomenon.

Used in many different disciplines (e.g., metallurgy and engineering – Bhamra *et al*., 2011; Thorén, 2014; Fadda *et al*., 2021; Catturi, 2022), the concept of "organizational resilience" may be defined as the «…capacity which enables the organizations to cope effectively with unexpected events, bounce back from crises, and even foster future success» (Duchek, 2020).

Organizational resilience can envision three different forms (e.g., Fleming, 2012; Conz and Magnani, 2020):

1. Reactive or adaptive behaviors to regain lost equilibrium, defined in this study as "type 1 organizational resilience".
2. Active behavior to exploit the specific crisis, sustaining growth and pursuing higher equilibrium: "type 2 organizational resilience".
3. Proactive behavior to prepare for future crises, developing strategic, risk, and crisis management skills: "type 3 organizational resilience"

Notably, previous research has already studied at length the multifaceted dimensional and cross-disciplinary concept of organizational resilience (Kerr, 2016) highlighting the importance of all the capabilities an organization can rely upon to respond effectively to a crisis (Ma *et al*., 2018). However, less attention has been given to the driving factors of such a phenomenon (Hillmann, 2021), and how they might be jointly used to provide a unifying vision of organizational resilience (e.g., Duchek, 2020) and to investigate what resilient organizations do and how resilience may be achieved in practice (e.g., Boin and van Eeten, 2013; Duit, 2016).

In this regard, the literature review performed in Section 2 allows the identification of three main drivers able to support and steer organizational resilience in a period of crisis, i.e., the personal characteristics of the entrepreneur and human resources, the management control system in place for a specific company, and the external support provided by knowledgeable experts (e.g., consultants), associations (e.g., the association of chartered accountants), or stakeholders (e.g., customers and suppliers).

These three categories of drivers are seen as relevant factors of success and profitability for a company in "normal" times, as well as critical drivers for the enhancement and development of organizational resilience skills in periods of crisis. For this reason, together with the three types of resilience, they constitute the theoretical framework for this study, presented in Section 3. While the insights from this study can apply to any crisis or crisis management scenario (Williams et al., 2017), we decided to focus on a specific critical situation, that is the crisis generated by the Covid-19 pandemic. Although the pandemic's impacts and companies' responses have been widely studied regarding specific industries (Verma and Prakash, 2020; Brodeur *et al.*, 2021) or the type of intervention (Donthu and Gustafsson, 2020; Culasso *et al.*, 2022), less emphasis has been given to the factors able to drive such changes, i.e., the drivers of organizational resilience, thereby calling for more research in this context (Duchek, 2020; Buzzao and Rizzi, 2023).

As described in Section 4, the research design of this study entailed organizing a focus group to create a semi-structured questionnaire on organizational resilience during the Covid-19 pandemic, used to conduct the interviews and develop an exploratory case study (Eisenhardt, 1989; Ryan *et al.*, 2002) - FASI (Fondo Assistenza Sanitaria Integrativa), a not-for-profit healthcare assurance organization strongly impacted by the Covid-19 crisis.

The results presented in Section 5 and discussed in Section 6 confirm the multilevel essence of organizational resilience. Drivers belonging to the three categories of our framework were contemporarily solicited to face different pandemic shocks. According to the level of preparedness for those shocks and the response timing, the same drivers (e.g., the ones related to the digitalization process) have played different roles, such as helping the business restore previous procedures (type 1), improving its processes (type 2), and preventing future shocks through cost forecasting activities (type 3).

The last section (no. 7) provides conclusions, limitations to this study, and ideas for future research.

2. Literature review about the concept of resilience

2.1. Defining resilience

Accademia della Crusca[1] (2014) reports that the term "resilience" has a Latin origin, i.e., "resiliens" (from the verb "resilire") whose meaning is "bounce back". This concept is primarily used in disciplines different from management and usually refers to "the ability of a substance to return to its usual shape after being bent, stretched, or pressed"[2]. With elasticity and strength, just to name a few, resilience is a feature that characterizes specific materials, suggesting their choice for specific construction purposes or uses.

The concept of resilience has been subsequently used across various disciplines (e.g., see Bhamra *et al.*, 2011; Fadda *et al.*, 2021) with quite similar meanings making it both a cross-disciplinary (Manfield and Newey, 2017) and a unifying concept (Thorén, 2014). Examples concern the metallurgical field, where resilience is considered as the ability of a metal to withstand the impact of forces that are applied to it (Angelico, 2018), "resilience engineering" (Hollnagel *et al.*, 2006), defined as "the ability of systems to anticipate and adapt to the potential for surprise and failure" (Zohuri and Moghaddam, 2018, p. 7), resilience in ecology, seen as «the persistence of relationships within a system […] measur(ing) the ability of these systems to absorb changes of state variables, driving variables, and parameters, and still persist» (Holling, 1973), or in psychology, where Grotberg (1996) argued that «resilience is a universal capacity which allows a person, group or community to prevent, minimize or overcome the damaging effects of adversity».

Interestingly, resilience is currently and extensively used to analyze and describe social systems (e.g., Catturi, 2022). In this regard, previous research has explored organizational resilience's multifaceted dimensions, such as operational, supply chain, and information resilience (Kerr, 2016). Moreover, three resilience components have been identified in the *individual* competencies to overcome personal difficulties, *group* capabilities to face negative collective challenges, and *organization* adaptive structures to avoid the failure of the entire system. The sum of these dynamic competencies represents the multilevel concept of *organizational resilience* (Ma *et al.*, 2018), which includes the entire set of capabilities on which an organization can build its answer to a crisis. Such a broad concept constitutes the focus of this study.

---

[1] Official website of the Accademia della Crusca Italian institute, 2014. www.accademiadellacrusca.it last visit 13/11/2022.

[2] Official website of the Cambridge Dictionary, 2023. https://dictionary.cambridge.org/ last visit 24/06/2023.

2.2. Defining organizational resilience

Broadly, "organizational resilience" may be defined as the «…capacity which enables the organizations to cope effectively with unexpected events, bounce back from crises, and even foster future success» (Duchek, 2020).

Extant literature has explored organizational resilience, its meaning(s) (e.g., Conz and Magnani, 2020), the interest shown in it both by academics and practitioners (e.g., Limnios *et al.*, 2014 and Woods, 2015), and its performance impacts (e.g., Beuren *et al.*, 2022). Furthermore, attention has been given to the conditions that can be (re)gained after a given shock (Ciasullo *et al.*, 2023) and the relevant "time frames" for preparing, implementing, and applying organizational resilience (Mazzara *et al.*, 2023; Polese *et al.*, 2023).

In the field of business and management, two main schools of thought emerge from the various interpretations and theories of organizational resilience (Duchek, 2020). The so-called "bouncing-back approach" (or theory), grounded in organizational psychology, argues that organizations can bounce back – or, simply, "bounce" – from challenging situations or adversities (e.g., Boin and van Eeten, 2013). The main idea underlying this approach is that organizations are dynamic systems able to adapt, change, and recover from disruptions, thanks to three main capacities (Duchek, 2020):

1. Absorptive capacity: the ability to absorb and understand the impact of disruptions or shocks. It involves the organization's knowledge, skills, and resources to recognize and interpret the situation (Lewin *et al.*, 2011).
2. Adaptive capacity: the ability to adapt and adjust in response to disruption. It involves the organization's flexibility and agility to change its strategies, processes, and structures (Denhardt and Denhardt, 2010).
3. Transformative capacity: the ability to go beyond mere adaptation and embrace transformative changes. It focuses on innovating, reimagining, and reinventing new ways of doing things to thrive in the face of adversity (Lengnick-Hall *et al.*, 2011).

Given this interpretation and within the bounce-back approach, organizational resilience is characterized by "the intrinsic ability to maintain and regain a dynamically stable state that enables organizations to continue their activities after various shocks and work effectively in continuing threats" (Bartuseviciene *et al.*, 2022, p. 3) and is conceived as the ability to adapt and return to normal activities (after shocks or threats), eventually allowing organizations to gain knowledge from what has happened and use such lessons as driving forces also to "bounce-forward" (Manyena *et al.*, 2011).

In this regard, some studies have argued that organizational resilience goes beyond a mere act of adaptation. In detail, the "bouncing-forward approach" argues that resilience is the ability to react positively to a traumatic event by developing new skills (Bartuseviciene *et al.*, 2022). Therefore, a shock impacting an organization is not seen as an obstacle but as an opportunity to improve on the initial state (e.g., Manyena *et al.*, 2011).

About the "time frames", the presented definitions and considerations clarify that organizational resilience can emerge at least in two moments, i.e., as a capability to overcome *(ex-post)* or to prevent (*ex-ante*) a crisis. Policies such as providing guidance for managers before the shock and favoring the assessment of its impacts afterward (Munoz *et al.*, 2022) or exploiting ex-ante mitigation as well as ex-post adaptation opportunities (McDaniels *et al.*, 2008), may be effective in promoting resilience at both times of analysis.

The considerations mentioned above have led previous researchers to propose models and frameworks able to describe the resilience process, thereby identifying specific stages (Duchek, 2020) and paths of resilience (e.g., Shepherd and Williams, 2023), as reported below.

3. Typologies and main drivers of organizational resilience

The literature review highlighted how organizational resilience envisions three different behaviors (e.g., Fleming, 2012; Conz and Magnani, 2020).

- The first one entails adopting reactive and adaptive behaviors when facing a crisis to regain the lost equilibrium, defined in this study as "type 1 organizational resilience".
- The second one refers to active behavior to exploit the specific crisis, thereby sustaining growth and pursuing new and higher levels of equilibrium, called in this study "type 2 organizational resilience". This entails relying on and exploiting a balanced system of drivers not only to overcome the impact of negative events but also to sustain growth, performance improvement, and organizational development over time.
- The third one, called "type 3 organizational resilience", builds on proactive behavior to plan and prepare for future crises, developing strategic, risk, and crisis management skills, procedures, and systems.

Moving forward, attention is to be given to the factors at the basis of organizational resilience, i.e., to the "drivers" favoring and/or enabling such capacity. Extant literature has revealed that these drivers are diverse, with many elements contributing to the resilience process (e.g., Duchek, 2020).

Key drivers of resilient behavior are identified by some studies in the organizational characteristics and attitudes like weighed prudence and willingness to search for continuous improvements (Wiig and Fahlbruch, 2019), preparedness, responsiveness, adaptability, and learning abilities (Koronis and Ponis, 2018), or the role of digital corporate social responsibility (Al-Omoush *et al.*, 2023). Other investigations focused more on human- and individual-related factors, like the role played by women's skills and aptitudes (Cosentino and Paoloni, 2021), or behavioral capabilities such as improvisation, experimentation, and knowledge implementation (Lengnick-Hall and Beck, 2005). Additional research included factors related to resource availability (e.g., time, financial, and human resources - Duchek, 2020), social resources (e.g., social capital and positive internal and external relationships - Lengnick-Hall and Beck, 2009), and power and responsibility relationships that affect the organization decisions and actions, such as resource allocation, change processes, and hierarchical decisions (Lengnick-Hall *et al.* 2011).

Lastly, and more relevant for this research, several studies have identified factors that might play a *joint role* in favoring organizational resilience. These include management control systems (e.g., Roffia and Dabić, 2023; Bracci and Tallaki, 2021), entrepreneurs' skills (e.g., psychological factors - Hartmann *et al.*, 2022), and enterprise characteristics (e.g., levels of digitalization - Isensee *et al.*, 2023), recognized as key drivers in different contexts.

In broad terms and in sum, relevant literature in the field identified organizational resilience drivers as internal and external, human – and process – related, entailing both soft and hard factors, involving interactions of individuals within the organization and with stakeholders. Notably, these drivers are not only potential enablers of organizational resilience but are also crucial for the success and profitability of a company in "normal" times.

Building on these considerations, this study identifies three key dimensions that can include specific driver categories, forming the theoretical framework shown in Figure 1. First, top management's ability to identify, orchestrate, and promote critical knowledge and skills inside the organization and among human resources constitute the "human dimension drivers" (as discussed by Teece, 2007, 2012, 2018 with the concept of micro-foundations). Second, several categories of management controls used to guide managers and employees (i.e., the control of results, actions, personnel, and culture - Merchant and Van der Stede, 2007) constitute the "control dimension drivers". Third, external consultants, bodies, and stakeholders might help a company during the various phases of its life (Greiner and Metzger, 1983; Momani, 2013) and form the "external dimension drivers".

The three driver categories in Figure 1 address the research gap identified by existing literature, specifically, the need for a unified vision and joint use of the various drivers that enhance organizational resilience (e.g., Duchek, 2020) and explain how resilient organizations function and achieve resilience in practice (e.g., Boin and van Eeten 2013; Duit 2016).

Figure 1 - The main drivers of organizational resilience investigated in this study

4. The research design

This study presents the findings of an exploratory case study. The strengths of case studies (Eisenhardt, 1989; Yin, 2009) in exploring and explaining how management accounting works in practice – both in terms of the techniques, procedures, and systems that are used and how they are used – are widely recognized (e.g., Scapens, 1990). In detail, exploratory case studies (Ryan *et al.*, 2002, p. 144) are used in accounting and management not only to explore the reasons for particular accounting practices but also to generate hypotheses about those reasons, allowing further testing. Several preparatory steps were necessary before developing the case study.

Firstly, a 1-hour focus group (Liamputtong, 2011) in March 2023 discussed the main drivers of organizational resilience, focusing on their impact during the Covid-19 crisis. Together with the three researchers, two legal representatives of an important managers' trade union participated: a top manager involved in control system management and an external controller with several consulting assignments in the territory. Their expertise was useful in confirming the importance of the three drivers, creating a semi-structured questionnaire (Panneerselvam, 2014), and identifying the case study, (Eisenhardt, 1989; Ryan *et al.*, 2002), internally to the trade union's network.

The Covid-19 pandemic period was selected for this study due to its severe impact since early 2020, causing many countries to adopt lockdowns at different moments that negatively impacted the global economic system (Allen, 2022) and business organizations across various countries and industries (Baber and Ojala, 2020). Companies had to adapt and reinvent themselves, profoundly changing their traditional *modus operandi* to regain an overall equilibrium and, sometimes, just to survive (Priyono *et al.*, 2020; Clauss *et al.*, 2022). These considerations fully embed the concept, the categories, and the functioning of organizational resilience, as addressed in this study.

The case study refers to a not-for-profit healthcare assurance organization significantly affected by the Covid-19 pandemic. The sudden shock – which could have overwhelmed the organization system – highlighted critical issues related to its business model and acted as a driver of change. We believe that this business case is peculiar since it perfectly depicts the three types of resilience objects of investigation and their development over time.

Following the initial meeting on 20/03/2023 five additional meetings were held, as shown in Table 1. A commercial executive was chosen for his top management role (first resilience driver), his business administration background and deep knowledge of the company's management control system (second driver), and his daily direct contact with the company's customers, suppliers, affiliated structures, and external stakeholders (third driver), highly impacted by the pandemic shocks.

The first meeting confirmed the case study fit for purpose, building up the case overview portrayed in section 5.1. The semi-structured questionnaire was administered in the second meeting and served as a track to investigate the resilience drivers (section 5.3). The third meeting clarified previous answers and addressed post-pandemic challenges (section 5.4). Findings from the document analysis (section 5.2) were reviewed in the fourth meeting. The final meeting allowed discussion of a draft of the results section to avoid eventual data misinterpretations and ensure the solidity of findings.

The second meeting was in-person, while the others were held via video calls. The same encoding method was maintained throughout the duration of the study: one researcher conducted the interview and managed the relationship with the company's manager, while the other two handled data collection – one transcribed the conversations, and the other pinned the key points of the discussion. Data triangulation sessions took place at the end of each meeting. The parts of the interviews reported in this paper were translated from Italian (the original language of the interview) to English, trying to preserve the shades of meaning of the respondent's words.

About the sources used to develop the case study, we relied on multiple data collection methods to increase the validity and reliability of this study through triangulation (Patton, 1987). Data sources included written documents (such as the company's regulation, statute, ethical code, social and integrated reports), interviews, and informal discussions. Additional secondary sources were used to recreate the organization's history and include newspaper articles, website news, and LinkedIn posts.

Table 1 - Case study overview: meetings, topics, and participants

Meeting	***Topic(s)***	***Length***
1	Discussing the project, schedule, key concepts, and goals. Collecting and preliminarily analyzing data and information. Discussing the three main components of the questionnaire.	1 hr.
2	Conducting the interview and administering the semi-structured questionnaire.	2 hrs.
3	Follow-up interview to clarify answers and collect additional feedback.	30 minutes
4	Collecting and discussing additional company data and publicly available documents.	30 minutes
5	Collecting follow-up feedback and updating information. Providing final feedback.	30 minutes

5. Results

5.1. Introduction: overview of FASI

Founded in 1977, FASI (Fondo Assistenza Sanitaria Integrativa) is an Italian not-for-profit association that provides supplementary healthcare services to executives and their families, complementing the National Health Service, thanks to a mutuality and intergenerational solidarity system[3]. Services are regulated by a national collective agreement between companies

[3] FASI's associates are Confindustria (representing Italian manufacturing and service

and managers. Executives pay about a third of the fixed annual fee, while their employers cover the rest. Due to this agreement, membership is quite stable: while FASI benefits from maintaining a strong membership base by offering valuable services, it has limited control over its revenues. This is due to the predetermined, not elastic or influenceable nature of its income, leading to a particular case of an "obliged" marketing mix.

FASI's mission is "protecting the health of its members, guaranteeing them healthcare excellence". To achieve this, FASI can count on more than 80 employees and 2.685 active agreements with healthcare facilities to satisfy the requests of around 129.000 members and their families. The main challenge is maintaining economic and financial equilibrium while expanding the services offered through the reinvestment of the operating surplus.

From a membership perspective, members obtain refunds when receiving medical services from an affiliated health facility. The intergenerational, solidarity, and mutuality system mentioned in its statute consists of the fact that managers and their families can maintain supplementary healthcare services even during the retirement period, when the expected sanitary expenditure increases, without suffering any risk-specific fee.

The characteristics described above make the selected case study a unique example to analyze organizational resilience during an intense and exogenous shock. In particular, how can a business with such an obliged marketing mix actively answer to a sudden change?

In the following sections, information gathered from additional and secondary sources as well as from the interviews is reported and discussed, looking for organizational resilience drivers and procedures that ensure the continuity of the FASI association.

5.2. Findings: the pre-pandemic phase - analysis of additional sources

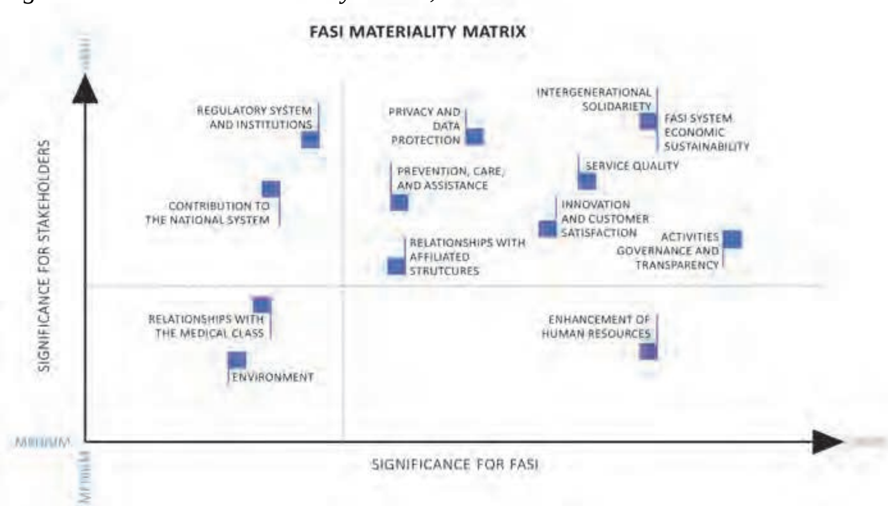
The analysis of the additional and secondary sources, such as FASI's regulation, statute, and ethical code, helped build the case narrative and provided background knowledge of the organization's scope and behavior, easing interactions with managers. Social reports from 2012 to 2019 revealed business trends before the pandemic outbreak (i.e., 2020) and highlighted FASI's social role, especially as the ongoing demographic change increased the proportion of retired managers. Over time, FASI has assumed a *primary role* in the national context, expanding its services and spreading awareness of the importance of the integrative healthcare system to *promote prevention*.

companies) and Federmanager (representing managers). Managers and firms that contribute to FASI fund become FASI members without acquiring the associate qualification.

From a resilience perspective, *accurate economic management* ensured the fund's prosperity, with capital reserves covering the operating deficits linked to the fluctuation in health service requirements. This economic and financial stability allowed for improvements in organizational (e.g., digitalization) and environmental (e.g., paper used, energy consumption) practices while ensuring high-quality services to its members.

The 2019 social report represents a snapshot of the pre-pandemic situation. In particular, the materiality matrix, shown in Figure 2, provides information on the topic prioritization made by FASI and its stakeholders.

Figure 2 - 2019 FASI materiality matrix, author translation



Some of the FASI's higher significance matters (i.e., on the right of the x-axis) are the expression of the association's mission (e.g., "intergenerational solidarity", "service quality", "prevention, care, and assistance"), existence preconditions (e.g., "FASI system economic sustainability") and mandatory requirements (e.g., "activities governance and transparency" and "privacy and data protection"). To achieve those objectives, FASI selects external partners aligned with the FASI Code of Ethics, promoting strong and lasting "*relationships with affiliated structures*".

Two other strategic and internal levers to achieve business goals are: "*enhancement of human resources*" and "*innovation and customer satisfaction*". The first is promoted through attention to gender equality, workforce training, team building, and job time flexibility, as demonstrated by a performance measurement system of workforce wellbeing. The second is supported by dematerialization (e.g., -31% paper usage compared to 2015 performance) and digitalization (e.g., creation of a mobile app, implementation of new ICT solutions for development, innovation, and data management) practices.

The 2019 report outlines future projects in new healthcare services, process reengineering, human resources formation, and ICT development. However, the pandemic and a change in FASI top management interrupted the social reporting process, leading to more website disclosures.

The semi-structured interview described in Section 4 explores FASI's pandemic response, with the findings presented in the next section.

5.3. Findings: the pandemic phase - the interview

The following statements summarize the interviews with FASI's representatives, described in Table 1. Like most Italian companies, FASI's first shock was adapting to social distancing imposed by Italian law during the first months of the pandemic (D.P.C.M. 09/03/2020). The increased *commitment of the top management* was crucial in this first moment:

«*Managers were more present inside the business and had to rapidly adapt the informative system due to the impossibility, for Covid-19 restrictions, of performing the daily rituals in presence*».

The organization also invested in *digitalization*, with digital solutions and training for employees that

«ensured the operative continuity of the fund, moving online all the offline procedures, thanks to the use of videoconferences and a shared file repository based on Microsoft Teams platform».

This digitalization gave the «push» to innovate the business model, responding to both social distancing and «structural changes introduced by the Italian State in the normative and fiscal sectors». FASI sought *external support*, as *internal competencies* were insufficient for the pandemic challenges:

«the specialized consultants represented the main interlocutor and played a key role during the pandemic», performing a «job of loyalty» that «led to a durative relationship that is still going on, even if the collaborations don't have the intensity and frequency that it has had before».

Enterprise networks and relationships (e.g., members and health institutions) also supported the digitalization process. The pandemic fostered a *sense of «empathy»* and increased «the *information and knowledge sharing* both inside and outside the company», facilitating acceptance of external procedure changes, thanks to increased stakeholders' collaboration.

In addition to digital innovation, key changes focused on the *management control systems*, with the pandemic that «provided the *push to innovate*». Initially, managers feared an overwhelming surge in health service requests, with no associated revenue benefit. Contrary to expectations, the total number of health service requests came to a screeching halt: during the emergency, the entire health system focused on Covid-19, and fear kept people away from hospitals, creating a backlog of requests:

> *«This situation generated a strong and delayed increase in health service requests, represented by the sum of the "normal" and the "past" ones that went standby». «The National Sanitary System was only partially able to respond to this increase; long waiting lists and a feeling of uncertainty among those who need care are two undesired outputs of this situation».*

Since FASI covers all the refund requests only through its own funds, without any external assurance, *forecasting* the number of health service requests represents the main «organizational challenge for FASI», impacting relationships with health facilities and stabilizing finances. After the first pandemic period, FASI decided to adopt *big data solutions* and a data warehouse from "Poste Italiane S.p.A.", allowing forecast analysis and financial simulations by «taking into account the medium age of FASI members and the average expected expenditures» and linking them to the *budget system*.

These changes required improved *digital skills* among employees, contributing to the need for digital training and stimulating «*higher efficiency of internal processes*». From a specific question about the role played by budget data and sustainability indicators, it emerged that, though they represent a strategic asset of the organization, «the contribution to first crisis management was marginal». Before Covid-19 pandemic, decisions relied heavily on «*top management intuitions and flair*», but now:

> *«intuition is not enough anymore, if before the decision-making process relied for 90% on intuition and 10% on control systems, now the relationship is exactly overturned. The performance indicator system experienced minimal qualitative and quantitative changes; the real modification was the awareness of its value and the role it played in the decision-making process».*

5.4. Findings: the post-pandemic phase - the follow-up interview

In the last interview, the manager summarized the changes at FASI:

«The business – as of the 7th of March 2020 – no longer exists», «crisis incentives the change, and the alternative to the adaptation is the closure of the business».
«The procedures used before the Covid-19 diffusion were not sufficient to face the crisis effectively».
«The real changes happened in the first three months when the paper and pen solutions were coercively interrupted by the social distancing procedures».

These aspects led to an approach transformation; digital solutions started to be conceived as something fast and reliable, and top management meetings to review performance became more frequent, leading to clearer objectives. FASI *consolidated* most of these innovations improving efficiency:

«Now it is quite common to hear someone inside the organization saying: "Oh, how I wish we had changed before!"».

Nevertheless, the improved internal side of the organization does not reflect what is happening outside the association's boundaries.

«Long waiting lists are still generating misalignments between demand – including the one through the FASI system – and supply – the whole sanitary system». «Here the motivations widen, the individual dimension (i.e., demand) is summed to the national organizational (i.e., sanitary system) and inter-organizational (i.e., FASI and affiliated health facilities) levels, leading to higher challenges related to economic problems with a national dimension».

The framework in Section 3 offers the theoretical key to reading the findings, providing insights into the drivers of organizational resilience.

6. Discussion

In this study, we refer to "organizational resilience" as the «…capacity which enables the organizations to cope effectively with unexpected events, bounce back from crises, and even foster future success» (Duchek, 2020). The purpose of this research is to individuate and categorize the value drivers of organizational resilience, offering a homogeneous reading key to the cross-disciplinary and multilevel richness of the literature (Bhamra *et al.*, 2011; Thorén, 2014; Fadda *et al.*, 2021; Catturi, 2022).

To achieve this, an exploratory case study was conducted. FASI's responses to Covid-19 pandemic provided valuable insights. In this Section, the drivers identified from interviews and secondary sources are organized into the three categories (i.e., human, control, and external dimension drivers) presented in Section 3. The combination of these drivers helped FASI develop different types of resilience (e.g., Fleming, 2012; Conz and Magnani, 2020), i.e., type 1 - "adaptive resilience", type 2 - "active resilience", and type 3 - "proactive resilience". The following discussion addresses the three main challenges that FASI faced during the pandemic, testing its organizational resilience.

The first challenge was the coercive social distancing that, for three months, led to the forced interruption of in-presence jobs (Table 2).

Table 2 - Social distancing challenge and adopted policies

First challenge: Social distancing			
Type of resilience	**Human drivers**	**Control drivers**	**External drivers**
"Previous procedures restoring" - Type 1: adaptive	- top management commitment - digital skills	- routine safeguard	- external competencies
"Process improvements" - Type 2: active	- internal information sharing - digitalization	- higher efficiency targets	- external information and knowledge sharing -sense of empathy with stakeholders

The first answer to that problem was the higher commitment of top management, which multiplied its efforts to maintain the daily routines in a digital way. External professionals trained the staff to perform their tasks online. Thanks to the acquired digital skills, FASI quickly bounced back to its previous equilibrium (type 1 of resilience). Soon, digitalization became essential, leading FASI to seek greater efficiency in service delivery. Increased information and knowledge sharing, both within and outside the organization, helped communicate FASI's needs to stakeholders. Additionally and notably, a sense of empathy among stakeholders emerged, easing the acceptance of procedural changes and improvements, ultimately leading to enhanced efficiency, bouncing forward from the initial situation (type 2 of resilience).

The second shock, though it never materialized, still gave FASI the push to change. It is related to the concerns about a potential surge in health service requests due to the pandemic, which could have drastically increased costs and threatened the association's economic equilibrium (Table 3).

FASI's pre-pandemic social reports revealed the awareness of such a threat. Financial reserves, built through prudent and accurate economic management would have worked as shock absorbers, while lasting relationships with affiliated health structures would have ensured service continuity. These drivers represented a proactive approach to resilience aimed at mitigating future risks (type 3 of resilience). However, the reaction to that shock would have been unstructured, based on top management intuitions and flair, low control systems' contribution, and eventual research for external help in case of internal skills shortage (type 1 of resilience). FASI understood that improving forecasting and cost simulations could enhance business stability. The digital skills acquired in the first Covid-19 period, together with the inclination to innovate the association, laid the foundation for implementing big data solutions linked to the budget system. This strengthened the effectiveness of the management control system (type 2 of resilience) and built a forward-looking orientation to prevent future crises (type 3).

Table 3 - Potential cost explosion challenge and adopted policies

Second challenge: Potential cost explosion			
Type of resilience	**Human drivers**	**Control drivers**	**External drivers**
"Wise management" - Type 3: proactive	- prudence	- accurate economic management	- relationships with affiliated health structures
"Unprepared answer to the shock" - Type 1: adaptive	- top management intuitions and flair	- low control systems' contribution	- external help
"Management control improvement" - Type 2: active. "Cost forecasting" - Type 3: proactive	- digital skills, -inclination to innovate	- big data solutions - budget system - forecasting and simulation ability	- cooperation with external providers

The third and still ongoing shock is related to the health service backlog that is leading to long waiting lists that threaten FASI's service quality (Table 4).

Internally, enhancing human resources skills, consolidating process improvements, and maintaining the management control system central, together with strong partnerships with affiliated health structures, could help restore the balance of the system (type 1 of resilience). However, internal efficiency alone may not be enough to face the National scale of the issue. The social reports (2012-2019) highlighted FASI's political efforts to increase its influence in the National Health System. FASI's message centers on its values and mission, emphasizing the importance of prevention; in fact, preventive checkups are faster and cheaper than subsequent pathology cures. If these ongoing efforts succeed and FASI promotes prevention on a national level, it could show strong proactive resilience, directly impacting the lives of the members and the Italian citizens (type 3 of resilience).

Table 4 - National backlog and long waiting lists challenge and adopted policies

Third challenge: National backlog and long waiting lists			
Type of resilience	**Human drivers**	**Control drivers**	**External drivers**
"Backlog resolution" Type 1: reacting	- enhancement of human resources skills - consolidation of improvements	- central role of the management control system	- relationships with affiliated health structures
"Promotion of health prevention" Type 3: proactive	- internal values and mission communication	- speed and economy of the services	- political weight on a national scale

The three shocks discussed earlier provided a push to innovate routines. Recognizing that previous procedures were inadequate to face pandemic challenges, FASI consolidated changes, improving overall performance. In this sense, reactive responses to specific challenges constituted the basis for further adaptations, leveraging the crisis to learn how to proactively anticipate future risks (Duchek, 2014). From a theoretical standpoint, this expands the research's contribution to the broader field of crisis management, underlining the drivers and the determinants of the dynamics between the occurrence of a crisis in the form of an event (e.g., the lockdown) or of a process (e.g., long term social distancing) and activities that restore (i.e., react) and maintain (i.e., build resilience) equilibrium over time (Williams *et al*., 2017).

The adopted framework enabled an aggregated analysis of resilience drivers that would otherwise have been fragmented. In fact, relevant literature describes these drivers as internal or external, human- and process-related, involving soft and hard factors, and the interaction of individuals within the organization and with stakeholders. Our analysis effectively addresses organizational aspects (e.g., prudence, accurate economic management, consolidation of improvements, inclination to innovate, digitalization, cooperation with providers) (Wiig and Fahlbruch, 2019; Al-Omoush *et al*., 2023), human factors (e.g., top management commitment and flair, HR skills) (Koronis and Ponis, 2018; Cosentino and Paoloni, 2021), resource availability (e.g., external competencies, relationships with affiliated health structures, cooperation with providers) (Duchek, 2020), and stakeholder relationships (e.g., internal and external information and knowledge sharing, sense of empathy) (Lengnick-Hall and Beck, 2009). All these drivers impact management control systems and decision-making (Lengnick-Hall *et al.* 2011).

The results confirm the multilevel essence of organizational resilience (Fleming, 2012; Conz and Magnani, 2020): organizations can either bounce back to the previous equilibrium (type 1) or bounce forward and take advantage of the opportunity to innovate (type 2) and can also prepare proactively for future crises (type 3). The same drivers can support different types of resilience, depending on timing: pre-shock policies would lead to an anticipatory type 3 of resilience, while ex-post solutions can vary based on whether they aim to restore or improve (Duchek, 2014).

For example, the driver "relationships with affiliated health structures" supported the "Wise management" policy, contributing to a type 3 of resilience in the "Potential cost explosion" challenge; differently, it could help regain the lost equilibrium and reach a type 1 of resilience in the challenge "National backlog and long waiting list". Similarly, the same drivers can constitute an answer to a shock and represent a precondition for future improvements and answers to new shocks: the "Social distancing" challenge imposed the improvement of digital skills to perform the previous routines (type 1); these skills constituted the prerequisite for the digitalization of the procedures, contributing to reaching higher efficiency levels (type 2) and facilitated forecasting control systems to prepare for future challenges (type 3).

The presented tables offer important tools to support crisis management. When a shock occurs, managers might benefit from the table structure to individuate immediate answers and foster the interactions among the human, control, and external components. Furthermore, the visual potential of the table can help the different actors involved in the process to understand their role and may stimulate the debate around the desired future development of individual competencies and organizational relationships. In this way, shared trajectories to build type 2 and type 3 resilience can be traced, thereby promoting a participated approach useful to effectively overcome the crisis. Once the table contents are defined, targeted metrics for each driver can be developed, building a balanced scorecard-likewise type of tool to monitor the advancement in resilience building (Kaplan and Norton, 1992).

7. Conclusion, limitations, and ideas for further research

More and more frequently our organizations are called on to face external and internal crises, thereby changing their traditional modus operandi and achieving new performances.

In this scenario, the capacity of an organization to be resilient has become fundamental, although different types of organizational resilience can be adopted, with different results and benefits.

Our research advocates that a so-called proactive behavior should be adopted, thereby moving towards a "type 3" level of organizational resilience. However, this study also demonstrates that a progressive path toward the development of the skills, tools, and structures needed to develop and embed a type 3 resilience within a given organization might be possible, and, even, planned. Within this context, a fundamental role can be certainly played by three categories of drivers, i.e., the personal characteristics of the top management (i.e., the human dimension), the management control systems in place for a company, and the external support provided by stakeholders, knowledgeable experts (e.g., consultants) or associations (e.g., the association of chartered accountants).

Even though this study was concerned with the analysis of the impacts generated by the Covid-19 pandemic, it also emphasizes that a balanced use of all the drivers identified at an organization's disposal might be effective in addressing a number of other crises – characterized differently if compared to the one from Covid-19. This is particularly relevant when organizations will strive to implement not just a reactive and adaptive behavior (i.e., looking for a type 1 resilience) but will pursue new levels of equilibrium and/or growth (i.e., aiming at overcoming a crisis by developing a type 2 form of resilience) and will let a type 3 resilience guide its plans and actions towards a desired future path of growth and value creation.

Despite the profound awareness of the company's dynamics shown by the manager we interviewed, acknowledged limitations of the study refer to the possible restricted perspective of a commercial executive, with other resilience drivers that may have impacted the organization's answer to the crisis. Moreover, one case study is not enough to provide general insights and policy recommendations. Subsequently, further research is already underway, specifically to submit the questionnaire to a sample of Italian companies in order to acquire more data and evidence and develop additional case studies.

References

Allen D.W. (2022), Covid-19 lockdown cost/benefits: A critical assessment of the literature, *International Journal of the Economics of Business*, 29(1), pp. 1-32. Doi: 13571516.2021.1976051.

Al-Omoush K., Ribeiro-Navarrete B., McDowell W.C. (2023), The impact of digital corporate social responsibility on social entrepreneurship and organizational resilience. *Management Decision* (ahead-of-print). Doi: 10.1108/MD-11-2022-1613.

Angelico E. (2018), Sperata resilienza. In *Architettura e Città: Ricostruzione e Innovazione* (Vol. 13, pp. 12-15), Di Baio Editore.

Baber W.W., Ojala A. (2020), Change of international business models during COVID-19. In *COVID-19 and international business*, pp. 103-112. Routledge.

Bartuseviciene I., Butkus M., Schiuma G. (2022), Modelling organizational resilience structure: insights to assess resilience integrating bounce-back and bounce-forward, *European Journal of Innovation Management*, (ahead-of-print). Doi: 10.1108/EJIM-04-2022-0180.

Beuren I.M., dos Santos V., Theiss V. (2022), Organizational resilience, job satisfaction and business performance, *International Journal of Productivity and Performance Management*, 71(6), pp. 2262-2279. Doi: 10.1108/IJPPM-03-2021-0158.

Bhamra R., Dani S., & Burnard K. (2011), Resilience: the concept, a literature review and future directions, *International Journal of Production Research*, 49(18), pp. 5375-5393. Doi: 10.1080/00207543.2011.563826.

Boin A., van Eeten M.J.G. (2013), The Resilient Organization – A critical appraisal. *Public Management Review*, 15, pp. 429-445. Doi: 10.1080/14719037.2013.769856.

Bracci E., Tallaki M. (2021), Resilience capacities and management control systems in public sector organisations, *Journal of Accounting & Organizational Change*, 17(3), pp. 332-351. Doi: 10.1108/JAOC-10-2019-0111.

Brodeur A., Gray D., Islam A., Bhuiyan S. (2021), A literature review of the economics of COVID-19, *Journal of Economic Surveys*, 35(4), pp. 1007-1044. Doi: 10.1111/joes.12423.

Buzzao G., Rizzi F. (2023), The role of dynamic capabilities for resilience in pursuing business continuity: an empirical study, *Total Quality Management & Business Excellence*, 34(11-12), pp. 1353-1385. Doi: 10.1080/14783363.2023.2174427.

Catturi G. (2022), L'azienda è organismo resiliente. Le possibili reazioni alle crisi economiche, *Management Control*, 3, pp. 177-202. Doi: 10.3280/MACO2022-003009.
Ciasullo M.V., Montera R., Ferrara M. (2023), Digital Readiness and Resilience of Digitally Servitized Firms: A Business Model Innovation Perspective, In: *Research and Innovation Forum 2022*, ed. Visvizi, A., Troisi, O., & Grimaldi M., pp. 509-517. Cham: Springer International Publishing. Doi: 10.1007/978-3-031-19560-0.
Clauss T., Breier M., Kraus S., Durst S., Mahto R.V. (2022), Temporary business model innovation – SMEs' innovation response to the Covid-19 crisis, *R&D Management*, 52(2), pp. 294-312. Doi: 10.1111/2Fradm.12498.
Conz E., Magnani G. (2020), A dynamic perspective on the resilience of firms: A systematic literature review and a framework for future research, *European Management Journal*, *38*(3), pp. 400-412. Doi: 10.1016/j.emj.2019.12.004.
Cosentino A., Paoloni P. (2021), Women's skills and aptitudes as drivers of organizational resilience: An Italian case study, *Administrative Sciences*, 11(4), 129. Doi: 10.3390/admsci11040129.
Culasso F., Giacosa E., Giordino D., Crocco E. (2022), Digital transformation: Is Covid-19 a catalyst for micro and small enterprises first steps toward innovation?, *Management Control*, 2 Suppl., pp. 71-94. Doi: 10.3280/MACO2022-002-S1004.
Denhardt J., Denhardt R. (2010), Building organizational resilience and adaptive management. In *Handbook of adult resilience*, ed. Reich, J.W, Zautra, A.J., & Hall, J.S., pp. 333-349, New York, The Guilford Press.
Donthu N., Gustafsson A. (2020), Effects of COVID-19 on business and research, *Journal of Business Research*, 117, pp. 284-289. Doi: 10.1016/j.jbusres.2020.06.008.
Duchek S. (2014), Growth in the face of crisis: the role of organizational resilience capabilities, *Academy of Management Proceedings*, 1, 13487. Doi: 10.5465/ambpp.2014.225.
Duchek S. (2020), Organizational resilience: a capability-based conceptualization, *Business Research*, 13(1), 215-246. Doi: 10.1007/s40685-019-0085-7.
Duit A. (2016), Resilience thinking: Lessons for Public Administration. *Public Administration*, 94, pp. 364-380. Doi: 10.1111/padm.12182.
Eisenhardt K.M. (1989), Building theories from case study research. *Academy of Management Review*, 14(4), pp. 532-550. Doi: 10.2307/258557.
Fadda N., Pischedda G., Marinò L. (2021), Sustainable-oriented management come fattore di resilienza organizzativa. Un caso di studio, *Management Control*, 2, pp. 39-60. Doi: 10.3280/MACO2021-002003.
Fleming R.S. (2012), Ensuring organizational resilience in times of crisis, *Journal of Global Business Issues*, 6(1), 31.
Greiner L.E., Metzger R.O. (1983), *Consulting to Management*, Englewood Cliffs, NJ, Prentice-Hall.
Grotberg E.H. (1996), The International Resilience Project Findings from the Research and the Effectiveness of Interventions, Paper presented at the Annual Convention of the International Council of Psychologists (54th, Banff, Canada, July 24-28, 1996).
Hartmann S., Backmann J., Newman A., Brykman K. M., & Pidduck R. J. (2022), Psychological resilience of entrepreneurs: A review and agenda for future research, *Journal of Small Business Management*, 60(5), pp. 1041-1079. Doi: 10.1080/00472778.2021.2024216.
Hillmann J. (2021), Disciplines of organizational resilience: contributions, critiques, and future research avenues, *Review of Managerial Science*, 15(4), pp. 879-936. Doi: 10.1007/s11846-020-00384-2.
Holling C.S. (1973), Resilience and Stability of Ecological Systems, *Annual Review of Ecology and Systematics,* 4, pp. 1-23. Doi: 10.1146/annurev.es.04.110173.000245.

Hollnagel E., Woods D.D, Leveson, N. (2006), *Resilience engineering: concepts and precepts*, Ashgate Publishing Ltd, Farnham.
Isensee C., Teuteberg F., Griese K.M. (2023), Success factors of organizational resilience: a qualitative investigation of four types of sustainable digital entrepreneurs, *Management Decision*, 61(5), pp. 1244-1273. Doi: 10.1108/MD-03-2022-0326
Kaplan R.S., Norton D.P. (1992), The Balanced Scorecard: Measures that Drive Performance, *Harvard Business Review*, 70(1), pp. 71-79.
Kerr H. (2016), Organizational resilience. *Quality*, 55(7), pp. 1-15.
Koronis E., Ponis S. (2018), A strategic approach to crisis management and organizational resilience, *Journal of Business Strategy*, 39(1), pp. 32-42. Doi: 10.1108/JBS-10-2016-0124
Lengnick-Hall C.A., Beck T.E. (2005), Adaptive fit versus robust transformation: How organizations respond to environmental change, *Journal of Management*, 31, pp. 738-757. Doi: 10.1177/0149206305279367.
Lengnick-Hall C.A., Beck T.E. (2009), Resilience capacity and strategic agility: Prerequisites for thriving in a dynamic environment, In *Resilience engineering perspectives, Volume 2. Preparation and restoration*, ed. Nemeth C.P., Hollnagel E., & Dekker S., pp. 39-70, Aldershot: Ashgate Publishing.
Lengnick-Hall C.A., Beck .E., Lengnick-Hall M.L. (2011), Developing a capacity for organizational resilience through strategic human resource management, *Human Resource Management Review,* 21, pp. 243-255. Doi: 10.1016/j.hrmr.2010.07.001.
Lewin A.Y., Massini S., Peeters C. (2011), Micro-foundations of internal and external practiced routines of absorptive capacity, *Organization Science*, 22, pp. 81-98. Doi: 10.1287/orsc.1100.0525.
Liamputtong P. (2011), *Focus group methodology: Principle and practice*, SAGE Publications Ltd, 1-224. Doi: 10.4135/9781473957657.
Limnios M.E.A, Mazzarol T., Ghadouani A., Schilizzi S.G.M. (2014), The resilience architecture framework: Four organizational archetypes, *European Management Journal,* 32(1), pp. 104-116. Doi: 10.1016/j.emj.2012.11.007.
Ma Z., Xiao L., Yin J. (2018), Toward a dynamic model of organizational resilience, *Nankai Business Review International*, 9(3), pp. 246-263. Doi: 10.1108/NBRI-07-2017-0041.
Manfield R.C., Newey L.R. (2017), Resilience as an entrepreneurial capability: integrating insights from a cross-disciplinary comparison, *International Journal of Entrepreneurial Behavior & Research*, 24(7), pp. 1155-1180. Doi: 10.1108/IJEBR-11-2016-0368.
Manyena B., O'Brien G., O'Keefe P., Rose J. (2011), Disaster resilience: a bounce back or bounce forward ability?, *Local Environment: The International Journal of Justice and Sustainability*, 16(5), pp. 417-424. Doi: 10.1080/13549839.2011.583049.
Mazzara L., Maione G., Leoni G. (2023), Performance Measurement and Management Systems in Local Government Networks: Stimulating Resilience Through Dynamic Capabilities, In Visvizi A., Troisi O., & Grimaldi M. (eds). *Research and Innovation Forum 2022*, pp. 539-546. Cham: Springer International Publishing. Doi: 10.1007/978-3-031-19560-0.
McDaniels T., Chang S., Cole D., Mikawoz J., Longstaff H. (2008), Fostering resilience to extreme events within infrastructure systems: Characterizing decision contexts for mitigation and adaptation, *Global Environmental Change*, 18(2), 310-318. Doi: 10.1016/j.gloenvcha.2008.03.001.
Merchant K.A., Van der Stede W.A. (2007), *Management control systems: performance measurement, evaluation and incentives*, Pearson education.
Momani B. (2013), Management consultants and the United States' public sector, *Business and Politics,* 15(3). Doi: 10.1515/bap-2013-0001.

Munoz A., Billsberry J., Ambrosini V. (2022), Resilience, robustness, and antifragility: Towards an appreciation of distinct organizational responses to adversity, *International Journal of Management Reviews*, 24(2), pp. 181-187. Doi:10.1111/ijmr.12289.
Panneerselvam R. (2014). *Research methodology*. PHI Learning Pvt. Ltd.
Polese F., Sirianni C.A., Guazzo G.M. (2023), How Startups Attained Resilience During Covid-19 Pandemic Through Pivoting: A Case Study. In Visvizi A., Troisi O., & Grimaldi M. (eds). *Research and Innovation Forum 2022*, pp. 519-527. Cham: Springer International Publishing. Doi: 10.1007/978-3-031-19560-0.
Priyono A., Moin A., & Putri V.N.A.O. (2020), Identifying digital transformation paths in the business model of SMEs during the COVID-19 pandemic, *Journal of Open Innovation: Technology, Market, and Complexity*, 6(4), 104. Doi: 10.3390/joitmc6040104.
Roffia P., Dabić M. (2023), The role of management control and integrated information systems for the resilience of SMEs, *Review of Managerial Science*, pp. 1-23. Doi: 10.1007/s11846-023-00657-6.
Ryan B., Scapens R.W., Theobold M. (2002), Methods of case study research, In *Research methods and methodology in accounting and finance*. Thompson Learning.
Scapens R.W. (1990), Researching management accounting practice: the role of case study methods, *The British Accounting Review*, *22*(3), pp. 259-281. Doi: 10.1016/0890-8389(90)90008-6.
Scapens R.W., Ryan B., Theobald M. (2002), *Research methods and methodology in accounting and finance*, Thompson Learning
Shepherd D.A., Williams T.A. (2023), Different response paths to organizational resilience, *Small Business Economics*, 61(1), 23-58. Doi: 10.1007/s11187-022-00689-4.
Teece D.J. (2007), Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance, *Strategic Management Journal*, 28(13), pp. 1319-1350. DOI: 10.1002/smj.640.
Teece D.J. (2012), Dynamic Capabilities: Routines versus Entrepreneurial Action. *Journal of Management Studies*, 49(8), 1395-1401. Doi: 10.1111/j.1467-6486.2012.01080.x.
Teece D.J. (2018), Business models and dynamic capabilities. *Long Range Planning, 51*(1), pp. 40-49. Doi: 10.1016/j.lrp.2017.06.007.
Thorén H. (2014), Resilience as a unifying concept, *International Studies in the Philosophy of Science*, 28(3), pp. 303-324. Doi: 10.1080/02698595.2014.953343.
Verma A. K., Prakash . (2020), Impact of covid-19 on environment and society. *Journal of Global Biosciences*, 9(5), pp. 7352-7363. -- www.mutagens.co.in/jgb/vol.09/05/090506.pdf.
Wiig, S. and Fahlbruch, B. (Eds) (2019), *Exploring Resilience: A Scientific Journey from Practice to Theory*, Springer International Publishing, Cham.
Williams T.A., Gruber D.A., Sutcliffe K.M., Shepherd D.A., Zhao E.Y. (2017), Organizational response to adversity: Fusing crisis management and resilience research streams, *Academy of management annals*, 11(2), pp. 733-769. Doi: 10.5465/annals.2015.0134.
Woods D.D. (2015), Four concepts for resilience and the implications for the future of resilience engineering, *Reliability Engineering & System Safety,* 141, pp. 5-9. Doi: 10.1016/j.ress.2015.03.018.
Yin R.K. (2009). *Case study research: Design and methods*. Vol. 5, Sage.
Zohuri B., Moghaddam M. (2018), A general approach to business resilience system (BRS), *SciFed Journal of Artificial Intelligence*, 1(3), pp. 1-26. Doi: 10.1016/B978-0-323-95112-8.00003-9.

Annual general meeting (AGM) in the digital era: Where do Italian companies stand?

Sonia Vitali[*]*, Michele Guidi, Marco Giuliani*

Received: 21 November 2023
Accepted: 4 August 2024

Abstract

Digital transformation has emerged as a crucial driver for businesses to thrive in today's dynamic landscape. This process has accelerated due to the widespread impact of the COVID-19 pandemic, compelling companies to reshape their corporate governance structures and mechanisms, including the format of annual general meetings (AGMs). In light of these developments, this study aims to explore how technological, organizational, and environmental factors influence the adoption and implementation of virtual AGMs among companies, using the theoretical lens of the technology-organization-environment (TOE) framework.

To achieve this, the study adopts a qualitative approach to examine the factors underlying the digital transformation of shareholder meetings in Italy. Specifically, the research conducts an inductive content analysis of AGM minutes from Italian companies listed on the FTSE-MIB, covering the years 2019, 2020, 2021, and 2022.

The evidence indicates that virtual AGMs among Italian listed companies are not widespread. During the COVID-19 pandemic, Italian firms avoided conducting virtual AGMs due to technological, organizational, and environmental factors, and most have no immediate plans to implement online meetings. Consequently, the pandemic has not driven AGM innovation in the Italian context. This evidence contributes to the literature on virtual shareholder meetings and provides insights for future research into companies' perspectives on this theme.

Keywords: Annual General Meeting, Virtual Shareholder Meeting, Digital Transformation, Corporate Governance, TOE Framework, Content Analysis.

---

[*] Università Politecnica delle Marche, Department of Management. Corresponding author: s.vitali@pm.univpm.it.

Management Control (ISSN 2239-0391, ISSNe 2239-4397), 2024, 2 – Special issue
Doi: 10.3280/MACO2024-002-S1008

1. Introduction

The increasing importance of digital transformation has fundamentally altered numerous organizations, introducing novel processes and mechanisms that significantly affect the core structures of business operations (Kraus *et al.*, 2022). This transformation spans various facets, from companies' business models (Matarazzo *et al.*, 2021) to corporate governance practices (Moro Visconti, 2020). For instance, digital platforms are reshaping interactions within corporate governance among various internal and external stakeholders, such as shareholders, managers, employees, banks, customers, and suppliers (Moro Visconti, 2020).

In the Italian context, Paoloni *et al.* (2023) have shown that the COVID-19 pandemic has profoundly impacted Italian small and medium-sized enterprises (SMEs) in terms of adopting new digital technologies. The pandemic and the consequent restrictions compelled companies to review the performance of their routine activities (e.g., the increase in remote work), while also allowing them to re-evaluate their strategies in previously unconsidered directions. In other words, the COVID-19 pandemic has played a catalyzing role in accelerating the digital transformation process (Kraus *et al.*, 2022; Subramaniam *et al.*, 2021), which is evident in the case of annual general meetings (AGMs), a valuable tool for facilitating corporate governance decision-making processes.

During the pandemic, to overcome the impossibility of conducting meetings in person, the activities of the collegial body were digitalized through virtual shareholders' meetings (Obialor and Ayileka, 2020). Globally, virtual shareholders' meetings of listed companies rose from 286 in 2019 to 2.240 in April 2020, with a significant increase in the United States (Freeburn and Ramsay, 2021). In 2020, very few AGMs were held with the physical presence of shareholders (Morrow Sodali, 2020). Large companies such as Ford Motor Company, Timberland, and Goldman Sachs organized their AGMs in a remote format. Consequently, virtual shareholder meetings could become predominant in the future (Brochet *et al.*, 2021). However, the debate on virtual AGMs is not new. For instance, Delaware law has enabled virtual shareholders' meetings since 2000, and Inforte Corporation held its first virtual AGM in 2001, becoming the first company in the world to do so. In China, public firms began conducting online shareholders' meetings in 2005, and all such companies have been holding virtual AGMs since 2017 (Gao *et al.*, 2020; Yao *et al.*, 2022). The increase in virtual AGMs is due to advances in technology and the COVID-19 pandemic, which prompted many companies to switch to an online format to ensure security and accessibility.

Nevertheless, most studies on virtual AGMs focus on analyzing the effects on companies and shareholders (Boros, 2003; Fairfax, 2010; Fontenot, 2017) in terms of shareholder participation (Gao *et al.*, 2020), shareholder questions (Brochet *et al.*, 2021; Schwartz-Ziv, 2021), and "social costs" (Iwasaki, 2020). However, as revealed by Ianniello and Stefanoni (2022), in the Italian context, the use of the internet for voting in meetings (webcasting) is absent, while cases of electronic and postal voting are extremely rare. Thus, research on hybrid or online meetings is highly encouraged, as a significant gap remains in understanding the specific factors that influence the adoption of virtual AGMs in the Italian corporate landscape.

To examine the factors affecting the adoption of virtual AGMs, this study primarily draws upon the technology-organization-environment (TOE) framework (Tornatzky and Fleischer, 1990), which identifies three elements of a company's context that influence innovation adoption: the technological context, the organizational context, and the environmental context (Baker, 2012). The TOE framework has been widely employed for understanding and analyzing how these elements influence the adoption and implementation of new technologies within organizations (Oliveira and Martins, 2011), yet it has been little adopted in corporate governance studies. In all, this study aims to answer the following research question:

RQ: How can technological, organizational, and environmental factors influence the adoption and implementation of virtual Annual General Meetings (AGMs) among companies?

To answer this question, we analyzed 133 minutes of AGMs held in 2019, 2020, 2021, and 2022 from a sample of companies listed on the FTSE-MIB. The study examined these documents using inductive content analysis, a method recommended for situations with limited prior knowledge (Elo and Kyngäs, 2008). The main results show that Italian companies did not adopt virtual shareholder meetings during the years 2019-2022 due to several technological, organizational, and environmental factors.

The research is structured as follows. The next section provides an overview of the main studies on the topic as well as the theoretical framework. Section three illustrates the methodology used in the research. Key results are described in the fourth section. Lastly, sections five and six present a discussion of the results and concluding observations, respectively.

2. Literature review

2.1 Virtual AGM: benefits and challenges

Historically, the relationship between shareholders and managers has been characterized as a pure "agency conflict" (Jensen and Meckling, 1976). The shareholder meeting, or annual general meeting (AGM), helps mitigate this conflict by providing shareholders with insights into the company's financial (and non-financial) performance, as well as managers' decisions and strategies. Furthermore, this gathering offers an opportunity for decision-making on matters beyond the discretion of the board and for dialogue between shareholders and managers. In other words, the AGM serves three main functions: information, decision-making, and acting as a forum (Strätling, 2003).

However, the literature raises concerns about the effectiveness of the AGM in fulfilling these functions (Nili and Shaner, 2022; Kastiel and Nili, 2016). For instance, some argue that the AGM is gradually becoming a "pro forma meeting" rather than a genuine tool for shareholder engagement (Nili and Shaner, 2022). Small shareholders, such as retail investors, exhibit "rational apathy" and are not incentivized to participate in the company's affairs. This leads to distortions in voting outcomes, a reduction in shareholder influence in initiating governance changes, and the creation of deadlock situations (Kastiel and Nili, 2016). A typical problem in public firms' AGMs is the low shareholder participation rate, often due to the widespread ownership structure and the difficulty of physically attending meetings (Gao *et al.*, 2020). Conversely, high levels of participation are positively associated with corporate profitability, as indicated by ROE and ROA ratios (Ianniello and Stefanoni, 2022).

Some scholars argue that virtual AGMs can address issues related to poor shareholder participation at traditional meetings (Boros, 2003; Fairfax, 2010; Fontenot, 2017; Gao *et al.*, 2020; Yao *et al.*, 2022; Van der Krans, 2007). In fact, one of the main advantages of virtual AGMs is the potential increase in shareholder participation (Boros, 2003; Fairfax, 2010; Fontenot, 2017), particularly among non-block investors (Gao *et al.*, 2020; Yao *et al.*, 2022) and corporations with geographically dispersed shareholders (Van der Krans, 2007). For example, empirical research by Gao *et al.* (2020) shows that, in Chinese public companies, shifting from traditional to virtual AGMs significantly increased minority shareholder participation by approximately 35%. This led to positive stock returns and improvements in corporate governance, such as reductions in tunneling activities (Gao *et al.*, 2020; Wang and Wang, 2021) and earnings manipulation (Wang and Wang, 2021). Additionally, small investors, by voting online on environmental issues, can enhance corporate environmental performance by drawing attention from influential groups such as the media and analysts, thereby impacting management's decisions (Yao *et al.*, 2022). Another benefit of virtual AGMs is the reduction in costs for shareholders and the removal of geographical and physical barriers to participation (Freeburn and Ramsay, 2021). Online meetings eliminate travel time and expenses, benefiting retail shareholders and those holding shares in multiple companies (Fontenot, 2017). Retail investors often cannot attend meetings due to their timing during working hours and their distance from shareholders' homes (Boros, 2003). However, holding a virtual AGM does not significantly influence shareholder participation when the meeting site is easily accessible and the cost of attending is low (Gao *et al.*, 2020). For instance, high-speed rail access to a company's headquarters influences small shareholders' participation in AGMs (Wang and Wang, 2021). Increased accessibility through virtual AGMs leads to greater shareholder involvement (Freeburn and Ramsay, 2021). Modern technologies improve interactions during virtual meetings (e.g., through dashboard tools) and transparency (e.g., through recordings available on websites), thus enhancing shareholder democracy (Nili and Shaner, 2022). For example, the application of blockchain and smart contracting can overcome issues related to transparency, verification, and identification, while reducing shareholder voting costs and organizational costs for companies, thereby enhancing the AGM's forum function (Lafarre and Van der Elst, 2018). Holding a virtual AGM also enhances an organization's brand by portraying a technologically advanced image (Fairfax, 2010; Fontenot, 2017), a benefit that extends beyond the technology sector (Fairfax, 2010). Improved relationships and dialogue with shareholders during and after the meeting, as well as an enhanced corporate governance image, are additional advantages (Abdennadher and Cheffi, 2020). The virtual AGM could also be an appealing tool for the next generation of shareholders (i.e., millennials) who are technologically savvy (Nili and Shaner, 2022). Lastly, another benefit of holding a virtual AGM is cost savings for organizations (Abdennadher and Cheffi, 2020; Freeburn and Ramsay, 2021). Companies can reduce meeting costs by approximately 50% through the use of technological tools, avoiding expenses related to booking venues, catering, security, and medical personnel (Fontenot, 2017). For example, the AGM costs for Inforte Corporation, the first company to conduct an AGM virtually, dropped from $20,000 for a physical meeting to $2,000 for a virtual format (Fairfax, 2010).

Despite these benefits, virtual AGMs present concerns for both shareholders and organizations. A survey of investors, non-investors, academics, and non-profits from global markets revealed that the main concerns are related to the inability to ask live questions during meetings, the absence of an option to submit questions in advance, and the fact that questions submitted are sometimes not answered (Belyeu *et al.*, 2021). Companies could manipulate uncomfortable questions, for instance by filtering or ignoring them, effectively allowing management to "cherry-pick" questions (Freeburn and Ramsay, 2021). On the other hand, the online format may make shareholders feel less inhibited when posing disruptive questions, making it difficult for management to respond (Fairfax, 2010). The virtual AGM could undermine the traditional face-to-face accountability of management (Boros, 2003), the interaction between shareholders and management, and among shareholders themselves (Fairfax, 2010; Nili and Shaner, 2022), as well as shareholders' ability to influence voters and management (Fairfax, 2010). These concerns are most pronounced in meetings where questions are submitted via email (Fairfax, 2010), and for retail shareholders who can only engage with directors at the AGM (Fontenot, 2017; Freeburn and Ramsay, 2021). Empirical analyses by Brochet *et al.* (2021) and Schwartz-Ziv (2021) show that virtual shareholder meetings are shorter than physical ones. Virtual meetings are 17% shorter, leading to a 16% reduction in shareholder questions (Schwartz-Ziv, 2021). However, shorter AGMs could be viewed either as a limitation of shareholders' voices (Schwartz-Ziv, 2021) or as an efficient compliance exercise that allows shareholders to communicate quickly and cost-effectively (Brochet *et al.*, 2021; Van der Krans, 2007).

Although virtual AGMs reduce costs for both investors and companies, they could lead to "social costs" linked to the value of "implicit communication, such as management's choice of words, tone of voice, and body language, which provide valuable information about the company. This value is likely high for shareholders, so if virtual meetings cannot capture it, they may be socially undesirable (Iwasaki, 2020). However, Iwasaki (2020) suggests several actions to mitigate the loss of "implicit communication" inherent in virtual meetings, such as conducting meetings via video rather than audio only, allowing shareholders to ask live and in real-time questions, and maintaining a record of shareholder actions. The greatest concern for managers involves the technical and legal issues of technological instruments, which could lead to disputes between shareholders and organizations and, consequently, the cancellation of meetings (Abdennadher and Cheffi, 2020).

In summary, "whether virtual meetings become the saving grace of shareholder democracy and stakeholder governance, or sink like the Titanic, will depend on the details" (Nili and Shaner, 2022, p. 194).

2.2 Theoretical framework

Our research relies on the theoretical framework developed by Tornatzky and Fleischer (1990), known as the "Technology-Organization-Environment (TOE)" framework, which is graphically represented in Fig. 1. This framework aims to identify the key organizational factors that drive companies to adopt new technologies and pursue technological innovation. Unlike other widely adopted theories that explain the technology adoption process in companies, such as the Technology Acceptance Model (TAM), the TOE model takes a more holistic approach and is better suited for addressing corporate governance issues (So *et al.*, 2021). The TOE framework is instrumental in identifying and mitigating risks that could lead to the failure of adoption projects (Stjepić *et al.*, 2021). This model distinguishes three key elements that influence organizational adoption of innovation: technology, organization, and environment. Thus, it focuses not on the nature of innovation decision-making itself but on the contextual factors that affect it (Krieger *et al.*, 2021). Many studies have applied this model to explain technology adoption in various areas, such as accounting (Akter *et al.*, 2024; So *et al.*, 2021; Seshadrinathan and Chandra, 2021), auditing (Krieger *et al.*, 2021; Widuri *et al.*, 2019), and across multiple industries, including the banking sector (Bany Mohammad *et al.*, 2022), as well as different types of companies, such as SMEs (Olutoyin and Flowerday, 2016; Stjepić *et al.*, 2021), and in the context of sustainable smart city studies (Ullah *et al.*, 2021). Moreover, as demonstrated by numerous previous studies, this framework is well-suited to explain the adoption of various types of technologies, such as blockchain (Akter *et al.*, 2024), business intelligence systems (Puklavec *et al.*, 2018), cloud computing (Borgman *et al.*, 2013), and data analytics (Kiu and Chan, 2024).

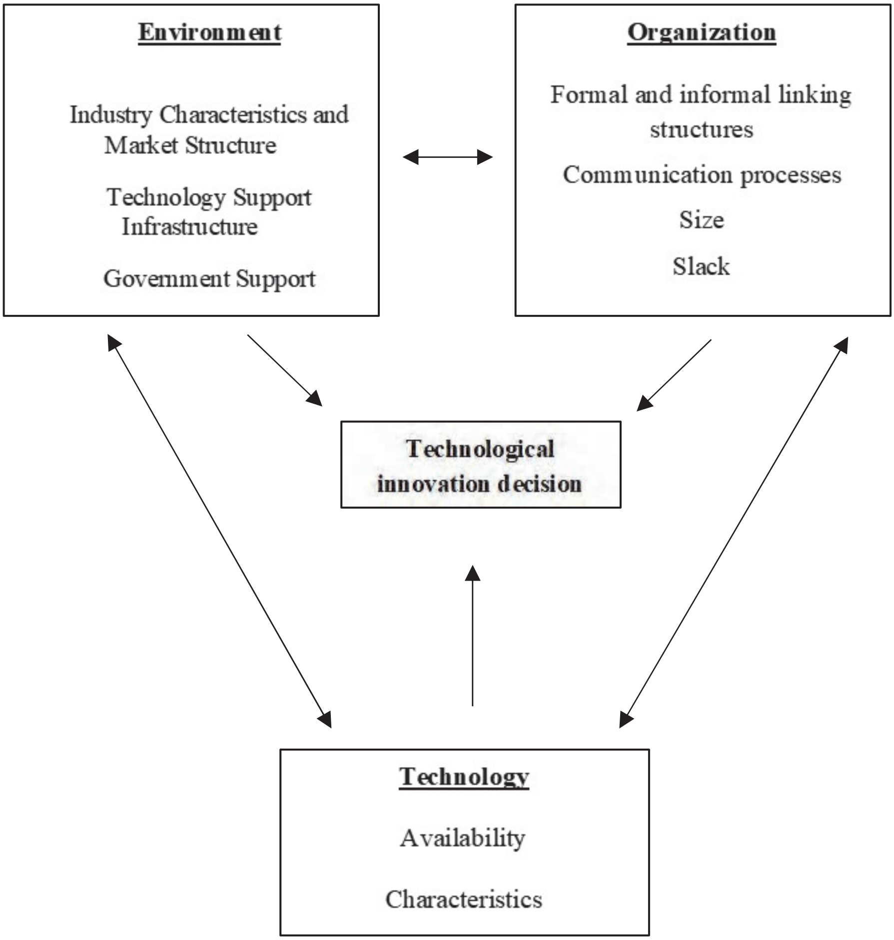
The technological context encompasses both internal and external technologies relevant to the firm, including the firm's existing practices and equipment, as well as the range of available technologies outside the firm (Oliveira *et al.*, 2011). For instance, the availability and characteristics of technology can affect the adoption of technological innovations (Puklavec *et al.*, 2018).

The organizational context relates to the resources and characteristics of the firm (Seshadrinathan and Chandra, 2021), such as employee structures, intra-firm communication processes, firm size, and the amount of slack resources (Baker, 2012). For example, the presence of informal linking agents – such as product champions, boundary spanners, and gatekeepers – is associated with adoption. Communication processes from top management can foster innovation by creating a supportive organizational environment that embraces change and aligns with the firm's core mission and vision (Baker, 2012). Larger organizations, due to economies of scale, are more likely to adopt technologies

(Kiu and Chan, 2024), while slack resources, though desirable and helpful, may not necessarily lead to technological innovation (Baker, 2012).

Lastly, the environmental context refers to the arena in which a company conducts its business and includes aspects such as industry conditions, the presence or absence of technology service providers, and the regulatory environment. Intense competition, firms in rapidly growing industries, and the availability of skilled labor, consultants, or suppliers of technology services can foster innovation. Conversely, government regulation can either support or hinder innovation (Baker, 2012).

Figure 1 - TOE Framework (Adapted from Tornatzky and Fleischer, 1990)



The literature suggests that these specific factors identified within the TOE framework can vary across different study contexts (Aoun *et al.*, 2011) and types of organizations (Akter *et al.*, 2024). In other words, this framework is flexible and allows for the extension and inclusion of additional categories and factors (Dehghani *et al.*, 2022). For instance, in the technological context, additional factors could include technology cost-benefit analysis, technology compatibility and complexity (Rosli *et al.*, 2013), as well as relative advantage (Seshadrinathan and Chandra, 2021). In the organizational context, factors such as the CEO's knowledge and innovativeness (Ghobakhloo *et al.*, 2011) and human resource IT competency (Baiod and Hussain, 2024) have emerged. Lastly, in the environmental context, previous studies have identified factors such as the perceived level of professional body support (Siew *et al.*, 2020), outsourcing support, third-party support (Puklavec *et al.*, 2018), user satisfaction, and organizational performance (Aoun *et al.*, 2011). Figure 1 illustrates the elements of the TOE framework.

3. Research method

3.1 AGM in Italy: a brief overview

Italian law primarily assigns to the AGMs of listed companies the following powers: 1. approving the financial statements and non-financial statements; 2. appointing and dismissing directors, appointing statutory auditors and the chairman of the board of statutory auditors, and, when required, the auditor; 3. determining the remuneration of directors and statutory auditors; 4. discharging the responsibilities of the CEO and the board of directors. Shareholders entitled to vote may attend the meeting. Their statements on agenda items, as well as the resolutions passed at the shareholders' meeting, are recorded in a specific document, the minutes. Italian law stipulates that this document must be prepared without delay, within the time necessary to comply with filing or publication obligations and must be made available on the company's website within thirty days of the meeting date. Additionally, the regulations allow shareholders to submit questions on agenda items before the meeting, which the company should answer prior to the AGM (hereinafter referred to as "pre-AGM questions"). These questions and the company's responses are always included in the appendices of the minutes, which also contain other information, such as the identity of the participants and the capital represented by each, the voting procedures and results, and the identification of shareholders who voted in favor, abstained, or dissented.

In Italy, the conduct of shareholders' meetings via remote communication has been permitted since 2003. Article 2370 of the Civil Code states that corporate by-laws may allow shareholder meetings to be attended through telecommunications or votes to be cast by correspondence or electronic means. Due to the Covid-19 pandemic, the Italian legislator, through the "Cura Italia Decree" (Article 106), established that companies could hold shareholders' meetings via telecommunications, even in deviation from the by-laws' provisions. This Decree also provided that participation in the general meeting could occur exclusively through a designated representative. Furthermore, the subsequent Decree (the so-called "Mille Proroghe Decree") extended the provisions of Article 106 of the "Cura Italia Decree" until July 31, 2022.

3.2 Research protocol

To address the research purpose, the authors analyzed the minutes and annexes of AGMs of Italian companies held in 2019, 2020, 2021, and 2022. Specifically, the sample comprises the 40 companies listed on the FTSE-MIB index. Although the data is publicly available, pseudonyms (C + nn, with "nn" representing a random number from 01 to 33) have been used instead of actual company names to maintain confidentiality.

The choice of this sample is justified for two reasons. Firstly, as previously mentioned, Italian companies were compelled to alter their meeting formats in 2020 due to the Covid-19 pandemic. Secondly, the FTSE-MIB is the primary index of Borsa Italiana and includes the shares of the 40 Italian companies with the highest market capitalization. These companies, due to their size, are generally more inclined to adopt technological innovations (Baker, 2012). Moreover, these firms frequently attract considerable attention from institutional investors and activists because of their significant market impact (Barko *et al.*, 2022). Thus, the participation behaviors of large shareholders significantly influence managerial decisions and firm outcomes, underscoring the need for reliable tools to facilitate this engagement (Zhang *et al.*, 2018). This suggests that large-cap companies may benefit from advanced technological solutions to support shareholder participation and address associated challenges in AGMs.

The AGM minutes for the years 2019, 2020, 2021, and 2022, corresponding to the financial statements of 2018, 2019, 2020, and 2021, were sourced from the websites of the selected companies. In total, the authors collected 133 minutes out of 160 AGMs held in the sample. The exclusion of 27 minutes was due to one company's 2019 meeting minutes not being available on its website, and twenty-six minutes, across different years, did not include any questions. These omissions are attributed to the fact that these companies are based in foreign countries where the inclusion of questions in AGM minutes is not mandatory. Despite being listed on the Italian market, these companies hold their AGMs outside Italy. Table 1 illustrates the sample considered.

Table 1 – Sample considered

	2019	**2020**	**2021**	**2022**
Initial sample	40 companies	40 companies	40 companies	40 companies
-Minutes not available	- 1 company			
-Company without headquarter in Italy	- 6 companies	-6 companies	-7 companies	-7 companies
AGMs minutes examined	= 33 minutes	=34 minutes	=33 minutes	=33 minutes

Source: authors' own elaboration

Researchers examined shareholders' questions and companies' responses using inductive content analysis, a method recommended for situations with limited prior knowledge (Elo and Kyngäs, 2008). One researcher identified questions from the AGM minutes, a process with minimal risk of errors due to its routine nature. A second researcher verified the accuracy through a sample check and found no errors. During the coding process, key concepts such as "virtual AGM," "telecommunications," and "electronic meeting" were assigned.

To ensure the accurate translation of the Italian AGM minutes, cross-checking via back-translation was employed (Maneesriwongul, 2004). One researcher translated the document, and another translated it back, comparing it with the original to identify inconsistencies.

The study's credibility was ensured through investigator triangulation (Patton, 2002), with multiple researchers independently analyzing the data. Transferability was achieved by detailing the sampling strategy for selecting Italian listed companies, particularly those from the FTSE-MIB index (Amin *et al.*, 2020). Dependability was supported by an audit trail documenting research decision (Eryılmaz, 2022). Confirmability was enhanced through peer debriefing, where colleagues reviewed interpretations to minimize bias (Rose and Johnson, 2020).

The adoption of these strategies ensured the credibility, transferability, dependability, and confirmability of the study. These characteristics are considered pillars of trustworthiness, crucial in establishing the reliability and validity of qualitative research (Anney, 2014; Guba, 1981; Guba and Lincoln, 1982; Schwandt *et al.*, 2007).

4. Results

From the analysis of the AGM minutes, it emerged that virtual AGMs are not common in Italy. Although Italian legislation allowed AGMs to be conducted via communications even before the pandemic, all FTSE-MIB listed companies held physical shareholders' meetings in 2019. Analysis of the 2019 AGM minutes revealed limited interest from shareholders regarding the topic of virtual AGMs. Only one question, presented in the AGMs of five different companies, indirectly addressed the issue by inquiring about initiatives to increase shareholder participation in the meetings:

"What initiatives were undertaken in 2018 to encourage the widest possible shareholder participation in the meetings and to facilitate the exercise of shareholders' rights?" (C22, 2019 AGM)

The onset of Covid-19 and the subsequent mobility restrictions made traditional AGMs impossible, forcing companies to alter their meeting formats. However, during the AGMs of 2020, 2021, and 2022, Italian companies permitted shareholder participation exclusively through designated representatives, despite the "Cura Italia Decree" allowing remote attendance. Italian companies opted to allow participation via communication only for specific individuals, such as board members, supervisory board members, auditors, and designated representatives. A few companies, such as company C28, permitted shareholders to follow the meeting through a passive streaming platform without allowing them to intervene or vote remotely. An exception occurred in the 2022 AGM: company C21 returned to a physical shareholders' meeting in October, when the temporary decree was no longer in effect.

Regarding AGM formats, some shareholders questioned companies about the reasons for not conducting virtual meetings during the Covid-19 pandemic. Examples of shareholder questions include:

"Parliamentary sessions, congresses, and university lectures will be held by electronic means; why do the assemblies of listed companies not? Why didn't you hold virtual shareholders' meetings on the Internet platform?" (C01, 2020 AGM)

"Has the board considered the possibility of using telecommunications for conducting the shareholders' meeting, given its importance in policy engagement? If so, what are the reasons for not Doing so?" (C03, 2022 AGM)

Despite varied responses, the main findings indicate that Italian companies are generally skeptical about virtual meetings, primarily due to technological concerns. These factors appear to be significant barriers to the modernization of AGMs. Italian companies deemed AGMs conducted through designated representatives as the most appropriate format during the emergency period. This preference was driven by the inability to hold physical meetings and the perceived inadequacy of available technologies for virtual meetings. For instance, company C05 described shareholder participation through a designated representative as:

"… the most efficient solution for properly conducting the meeting proceedings regarding participant identification and establishing quorums; and for improving shareholder protection" (C05, 2021 AGM)

Additionally, company C13 explained that the decision to use designated representatives rather than virtual meetings was influenced by the lack of reliable technological tools to ensure accurate shareholder identification, participation, and voting rights. This sentiment was echoed by other companies. For instance, company C18 illustrated that the selection of a designated representative was due to the following reasons:

"… the absence of infrastructure capable of effectively supporting real-time remote participation and the ongoing uncertainty about recognizing actual participants" (C18, 2021 AGM)

Many companies (e.g., C09, C19, C23) perceive remote shareholder participation as fraught with risks, including operational and IT-related concerns, challenges with shareholder identification, and technical glitches. These issues could hinder shareholders' ability to exercise their rights and potentially disrupt the meetings. Companies such as C02 and C21 stated that conducting a virtual AGM would present significant challenges, especially in ensuring accurate identification of remote participants and managing potential interruptions or disruptions of online platforms.

In addition to these concerns, some companies highlighted obstacles related to the costly organization of virtual AGMs and the risk of cyber-attacks. For instance, company C22 expressed worries about potential interruptions of telematic links or cyber-attacks during AGMs, noting these risks are amplified with a large number of shareholders, mentioning a total of 610,000 shareholders. Furthermore, company C20 discussed the expenses and time required for remote participation, emphasizing the significant costs and time commitments, particularly given the current lack of necessary IT tools.

During meetings held between 2019 and 2022, a shareholder questioned several companies about the future possibility of conducting virtual meetings (e.g., "Are you going to hold shareholder meetings also via the Internet?"). In response, some companies stated that their corporate by-laws do not currently permit virtual meetings. While some companies (e.g., C07, C08, C14, C19) indicated no immediate plans to amend their by-laws, others mentioned they might consider amendments in the future if circumstances allow for virtual meetings. For example, company C06 noted it would consider virtual AGMs after a thorough cost-benefit analysis. Conversely, other organizations (e.g., C09, C18, C22, C23) declared that their corporate by-laws already permit shareholder meetings via communications. However, due to the aforementioned barriers and risks, they did not conduct online meetings in 2020, 2021, and 2022 and will reassess such formats in the future based on technological advancements and cost-benefit analyses. For example, C23 stated:

"… at present, this solution is not viable due to the complexity and costs still associated with its implementation. Nonetheless, the Bank intends to keep this possibility open for future developments, particularly technological advancements, which should be carefully evaluated, taking into account benefits, complexity, and costs" (C23, 2020 AGM)

An overview of the key results discussed in this section is presented in Table 2, which provides a concise summary of AGM formats, shareholder questions and concerns, and the companies' responses from 2019 to 2022.

Table 2 – Results overview

Year	Format of AGMs	Shareholder Questions/Concerns	Companies' Responses
2019	Physical AGMs	Limited interest in virtual AGMs	Focus on increasing shareholder participation in physical AGMs
2020	Designated representative	Questions on why virtual AGMs were not used	Technological and operational barriers were predominantly cited
2021	Designated representative	Continued questioning on the use of telecommunications for AGMs	Highlighted lack of reliable technology for virtual AGMs
2022	Designated representative (few exception)	Future possibility of virtual AGMs; technological barriers	Some companies open to future virtual AGMs depending on technological advancements and cost-benefit analyses

5. Discussion

In 2019, all Italian companies held traditional shareholders' meetings. The advent of the Covid-19 pandemic forced companies to reconsider their meeting formats. Consequently, Italian companies listed on the FTSE-MIB decided to conduct AGMs in 2020, 2021, and 2022 via designated representatives, despite the legislative option for virtual-only meetings. Specifically, these AGMs allowed participation only for specific individuals (such as board members, supervisory boards, auditors, and notaries) via communications, while shareholders could attend only through designated representatives. Despite digital transformation reshaping entire sectors and daily business activities (Kraus *et al.*, 2022), Italian companies did not adopt technological solutions for AGMs, even during the pandemic. In other words, the pandemic did not drive the digital transformation of AGMs (Culasso *et al.*, 2022).

To address the research question, we analyzed how technological, organizational, and environmental factors influence the adoption and implementation of virtual AGMs among companies.

Regarding technological factors, Italian companies often cite technical barriers when discussing virtual AGMs, including issues related to technology availability, characteristics (Baker, 2012), and complexities (Rosli *et al.*, 2013) related to shareholder identification and technical glitches. Previous studies suggest that blockchain technology could address these barriers, as "in a blockchain system, shareholders can be identified using their wallet's digital identity or proof of authentication stored outside the blockchain" (Lafarre and Van der Elst, 2018, p. 16). Additionally, concerning the risks of interruptions and inefficiencies due to large shareholder numbers, Italian listed companies have fewer shareholders compared to major American companies where virtual AGMs are more prevalent. For instance, companies like Ford Motor Company, Timberland, and Goldman Sachs organize remote AGMs. Recently, Banco Santander, a leading Spanish credit institution, partnered with Broadridge, a virtual AGM platform provider, to implement blockchain technology in AGMs. In summary, it appears that organizations were less inclined to innovate AGM formats due to (perceived) technology availability and characteristics. Moreover, the cost-benefit analysis of technology, where perceived benefits outweigh adoption costs (Rosli *et al.*, 2013), could deter AGM innovation during the Covid-19 pandemic. The findings suggest that Italian companies may not fully grasp the benefits associated with virtual AGMs, such as cost savings (Abdennadher and Cheffi, 2020; Fontenot, 2017; Freeburn and Ramsay, 2021; Lafarre and Van der Elst, 2018) or increased shareholder engagement (Freeburn and Ramsay, 2021).

Moreover, improvements in technological branding (Fairfax, 2010; Fontenot, 2017) or AGM transparency (Nili and Shaner, 2022) are advantages not achieved by Italian companies. Furthermore, companies were not fully aware of the "non-financial/economic costs" associated with their chosen format. Shareholders' meetings via designated representatives did not fulfill the roles of traditional AGMs (Strätling, 2003), achieving only decision-making rather than information exchange and a forum. Additionally, the AGM format via designated representatives eliminated traditional face-to-face accountability (Boros, 2003; Freeburn and Ramsay, 2021; Nili and Shaner, 2022), preventing shareholders from participating in meetings and engaging with boards or other shareholders (Fairfax, 2010; Nili and Shaner, 2022; Freeburn and Ramsay, 2021). This loss of interaction, typical of AGMs (both physical and specific virtual types), could potentially limit shareholder voices (Schwartz-Ziv, 2021). It should be noted that the Italian AGM format during the emergency period did not enable shareholders to assess company value through non-verbal communication from managers (Iwasaki, 2020). In other words, these shareholder meetings incurred "social costs" due to "implicit communication gaps": investors could not discern values conveyed through non-verbal elements like tone, choice of words, and body language from management (Iwasaki, 2020). In sum, organizations conducted a cost-benefit analysis where not all benefits of virtual AGMs and not all costs of AGMs through representatives were taken into consideration.

Regarding organizational factors, the size of companies does not seem to have significantly influenced the adoption of virtual AGMs. Despite their larger size and higher market capitalization, which typically suggests a greater inclination towards innovation (Kiu and Chan, 2024), these companies did not embrace virtual AGMs. This reluctance may stem from conservative communication processes among directors who were skeptical of new technologies, hindering innovation in this area. Moreover, the absence of informal linking agents – shareholders interested in promoting remote AGMs – might have played a pivotal role in the lack of digital transformation of traditional shareholder meetings. These agents could act as catalysts within the organization, advocating for technological advances that enhance shareholder engagement and operational efficiency through virtual meetings. Their influence could prove instrumental in overcoming organizational inertia and fostering a more progressive stance towards adopting modern meeting practices. Essentially, while traditional organizational size may not directly facilitate virtual AGM adoption, the proactive involvement of informal linking agents offers a promising path for navigating technological barriers and guiding companies toward embracing digital innovations in corporate governance.

Concerning environmental factors, the lack of government regulations (Baker, 2012) specifying virtual shareholders' meetings, including cyber-risk occurrences or voting interruptions, might have discouraged companies from conducting virtual AGMs. Italian norms only allow virtual AGMs but do not specify the effects of potential difficulties or interruptions during virtual AGMs. For example, company C04 stated, "the media can be used to conduct when the effects of any difficulties or interruptions of the telematic link on the development and validity of the assembly will be chaired" (C04, 2022 AGM). Hence, regulatory updates could be crucial to encouraging organizations towards AGM digitalization. In fact, compliance with regulations is another concept emerging from the analysis of minutes. Several companies emphasized that they acted "law compliant", and some highlighted that future AGM formats would depend on regulatory developments ("for the future, C10 will comply with regulatory developments in the holding of shareholders meetings"; C10, 2022 AGM). Simultaneously, the lack of adequate technological support infrastructure poses a formidable obstacle to adopting virtual shareholders' meetings, significantly contributing to the non-adoption of virtual AGMs in Italy. This technological infrastructure gap encompasses aspects such as broadband access, reliable video conferencing platforms, and cybersecurity measures, which have hindered Italian companies' readiness to effectively transition to virtual AGMs. Conversely, industry characteristics and market structure did not noticeably influence the adoption of virtual AGMs among the sample companies. Despite operating across diverse industries and facing varying dynamics in market structures and shareholder pressures, these factors did not correlate with different levels of technology adoption for conducting AGMs. This suggests that industry-specific conditions and market competitiveness did not decisively motivate or hinder companies from embracing virtual meeting technologies for shareholder engagement.

In conclusion, the Covid-19 pandemic presented a significant opportunity for major Italian companies to advance towards digitalizing shareholder meetings. They could have experimented with virtual AGMs during this period to realize all the associated benefits, such as enhancing corporate governance and the AGM forum, as the mentioned barriers could be overcome with modern technologies. Additionally, as noted by Nili and Shaner (2022), achieving the benefits of virtual meetings depends on specifics, such as conducting virtual AGMs with video to avoid drawbacks and issues identified in previous studies (Fairfax, 2010; Freeburn and Ramsay, 2021; Iwasaki, 2020; Nili and Shaner, 2022). For the Italian context, where traditional AGMs prevail and remote AGMs are not widespread, the implementation of hybrid shareholders' meetings could be a significant starting point for these companies towards modernizing AGMs.

6. Conclusions

This study aims to examine how technological, organizational, and environmental factors influence the adoption and implementation of virtual Annual General Meetings (AGMs) among companies. To achieve this objective, the minutes of AGMs from Italian-listed companies held between 2019 and 2022 were analyzed using inductive content analysis. The main results of this study are summarized in Table 3, which illustrates the TOE (Technology, Organization, Environment) factors influencing the adoption of virtual AGMs among the investigated firms.

Table 3 – TOE factors influencing virtual AGMs

Context	Factor	Influence
Technological	Availability of appropriate technologies	The lack of secure and robust platforms for virtual meetings was a major barrier.
	Characteristics and complexities of technologies	Technological characteristics such as ease of use, reliability, and the ability to ensure accurate shareholder identification and participation were critical. Complexities in using new technologies deterred companies from adopting virtual AGMs.
	Cost-benefit analysis of technology adoption	Organizations conducted a cost-benefit analysis where not all benefits of virtual AGMs and not all costs of AGMs through representatives were taken into consideration. High perceived costs and low perceived benefits led to resistance in adopting new technologies.
Organizational	Formal and informal linking structures	The presence or absence of formal structures (like dedicated teams or roles) and informal structures (such as internal champions or advocates for technology) within the organization influenced the adoption of virtual AGMs.
	Communication processes	Effective communication processes, particularly top-down communication from management, fostered a supportive environment for adopting new technologies. Poor communication hindered innovation.
Environmental	Availability of technology support infrastructure	The availability of external support, such as reliable internet infrastructure and cybersecurity measures, influenced the adoption of virtual AGMs. Inadequate infrastructure was a significant barrier.
	Government regulation and support	The lack of clear regulations or supportive policies for virtual AGMs discouraged companies from adopting them. Regulatory support could have provided the necessary push for technological adoption.

Overall, the study suggests that while the Covid-19 pandemic presented a compelling opportunity for major Italian companies to transition to digital shareholder meetings, it did not catalyze significant digital transformation within the Italian corporate landscape. Consequently, the adoption of virtual formats for annual shareholder meetings in Italy does not appear imminent, and the path toward digitalizing AGMs seems lengthy.

This research contributes theoretically by enriching the body of studies on shareholder meetings, which remains relatively underexplored in economic and business research (Strätling, 2003). Additionally, academic research on information technology and systems (IS) in corporate governance, or e-corporate governance, is limited (Abdennadher and Cheffi, 2020). Empirical studies on virtual meetings are scarce, with most focusing on the impact of remote AGMs on shareholder participation (Gao *et al.*, 2020). To the best of the authors' knowledge, this is the first empirical analysis to examine the technological, organizational, and environmental factors influencing the adoption of virtual shareholder meetings. This study thus contributes to expanding the knowledge of the TOE (Technology, Organization, Environment) framework by applying it within a corporate governance context.

In terms of practical implications, the study identifies key technological, organizational, and environmental factors that companies and policymakers should consider when innovating shareholder meetings. For example, from a regulatory perspective, the research suggests considerations for conducting AGMs in emergency contexts and rethinking conventional meeting practices.

However, certain limitations should be noted. Firstly, the sample is restricted to companies listed on the FTSE-MIB, excluding other stock indices and non-listed firms. The FTSE-MIB, as the primary index of Borsa Italiana, includes the 40 Italian companies with the highest market capitalization. These companies are more likely to adopt technological innovations (Baker, 2012) and attract significant attention from institutional investors and activists due to their market impact (Barko *et al.*, 2022). Large shareholders' participation behaviors significantly influence managerial decisions and firm outcomes, necessitating reliable tools to enhance engagement (Zhang *et al.*, 2018). In contrast, SMEs may face different challenges in holding AGMs due to fewer shareholders. Thus, FTSE-MIB companies are considered the most representative for exploring this research topic, according to the authors. Secondly, a methodological limitation involves the manual identification of AGM-related questions by a researcher, which could introduce professional bias. Nonetheless, as detailed in the methodology section, a second researcher performed random sampling, confirming the accuracy of the results.

Future research could expand the sample to include companies in the technology sector, where early adopters of virtual meetings are often found (Fontenot, 2017). This inclusion could provide insights into differences in innovation adoption between tech companies and others. Further investigation could also explore companies' perspectives on virtual AGMs through surveys or semi-structured interviews. Finally, additional studies examining the relationship between technology adoption and technological, organizational, and environmental factors could yield valuable insights.

References

Abdennadher S., Cheffi W. (2020), The effectiveness of e-corporate governance: an exploratory study of internet voting at shareholders' annual meetings in France, *Corporate Governance: The International Journal of Business in Society*, 20(4), pp. 673-702. Doi: 10.1108/CG-04-2019-0116.

Akter M., Kummer T.F., Yigitbasioglu O. (2024), Looking beyond the hype: The challenges of blockchain adoption in accounting, *International Journal of Accounting Information Systems*, *53*. Doi: 10.1016/j.accinf.2024.100681.

Amin M.E.K., Nørgaard L.S., Cavaco A.M., Witry M.J., Hillman L., Cernasev A., Desselle S.P. (2020), Establishing trustworthiness and authenticity in qualitative pharmacy research, *Research in social and administrative pharmacy*, 16(10), pp. 1472-1482.

Anney V.N. (2014), Ensuring the quality of the findings of qualitative research: Looking at trustworthiness criteria, *Journal of emerging trends in educational research and policy studies*, 5(2), pp. 272-281.

Aoun C., Vatanasakdakul S., Chen Y. (2011), IT governance framework adoption: Establishing success factors. In *Governance and Sustainability in Information Systems. Managing the Transfer and Diffusion of IT: IFIP WG 8.6 International Working Conference, Hamburg, Germany, September 22-24, 2011. Proceedings* (pp. 239-248), Springer Berlin Heidelberg.

Apostolides N. (2010), Exercising corporate governance at the annual general meeting, *Corporate Governance: The International Journal of Business in Society*, 10(2), pp. 140-149. Doi: 10.1108/14720701011035666.

Baker J. (2012), The Technology – Organization – Environment Framework. Doi: 10.1007/978-1-4419-6108-2_12.

Baiod W., Hussain M.M. (2024), The impact and adoption of emerging technologies on accounting: perceptions of Canadian companies, *International Journal of Accounting & Information Management*.

Bany Mohammad A., Al-Okaily M., Al-Majali M., Masa'deh R.E. (2022), Business intelligence and analytics (BIA) usage in the banking industry sector: an application of the TOE framework, *Journal of Open Innovation: Technology, Market, and Complexity*, *8*(4), 189.

Barko T., Cremers M., Renneboog L. (2022), Shareholder engagement on environmental, social, and governance performance, *Journal of Business Ethics*, 180(2), pp. 777-812.

Belyeu K., Lloyd C., Ramming A., Riggs S. (2021), *2021 Global Benchmark Policy Survey*, Institutional Shareholder Services.

Borgman H. P., Bahli B., Heier H., Schewski F. (2013), Cloudrise: Exploring cloud computing adoption and governance with the TOE framework, *Proceedings of the Annual Hawaii International Conference on System Sciences*. Doi: 10.1109/HICSS.2013.132.

Boros E. (2003), Virtual shareholder meetings, *Duke L. & Tech. Rev.*, 3, 1.

Brochet F., Chychyla R., Ferri F. (2021), Virtual shareholder meetings, *University of Miami Legal Studies Research Paper*, 3743064. Doi: 10.2139/ssrn.3743064

Bryan J.D., & Zuva T. (2021), A review on TAM and TOE framework progression and how these models integrate, *Advances in Science, Technology and Engineering Systems Journal*, *6*(3), 137-145.

Culasso F., Giacosa E., Giordino D., Crocco E. (2022), Digital transformation: Is COVID-19 a catalyst for micro and small enterprises first steps toward innovation?, *Management Control*, 2, pp. 71-94. Doi: 10.3280/maco2022-002-s1004.

Dehghani M., William Kennedy R., Mashatan A., Rese A., & Karavidas D. (2022), High interest, low adoption. A mixed-method investigation into the factors influencing organisational adoption of blockchain technology, *Journal of Business Research*, *149*. Doi: 10.1016/j.jbusres.2022.05.015.

Elo S., Kyngäs H. (2008), The qualitative content analysis process, *Journal of advanced nursing*, 62(1), pp. 107-115.

Eryılmaz Ö. (2022), Are dissertations trustworthy enough? The case of Turkish ph. d. dissertations on social studies education, *Participatory Educational Research*, 9(3), pp. 344-361.

Fairfax L.M. (2010), Virtual shareholder meetings reconsidered. *Seton Hall L. Rev.*, 40, 1367.

Fontenot L.A. (2017), Public company virtual-only annual meetings, *Business Lawyer*, 73, 35.

Freeburn L., Ramsay I. (2021), Virtual Shareholder Meetings in Australia. *International Company and Commercial Law Review*, 32(2), pp. 53-79. Available at SSRN. Doi: 10.2139/ssrn.3762255.

Gao H., Huang J., Zhang T. (2020), Can online annual general meetings increase shareholders' participation in corporate governance?, *Financial Management*, 49(4), pp. 1029-1050. Doi: 10.1111/fima.12301.

Ghobakhloo M., Arias-Aranda D., Benitez-Amado J. (2011), Adoption of e-commerce applications in SMEs, *Industrial Management and Data Systems*, *111*(8). Doi: 10.1108/02635571111170785.

Guba E.G. (1981). Criteria for assessing the trustworthiness of naturalistic inquiries, *Ectj*, 29(2), pp. 75-91.

Guba E.G., Lincoln Y.S. (1982), Epistemological and methodological bases of naturalistic inquiry,. *Ectj*, 30(4), pp. 233-252.

Ianniello G., Stefanoni A. (2022), Redditività aziendale e partecipazione all'assemblea annuale degli azionisti nelle società italiane quotate in borsa, *RIREA*, 2, pp. 176-196. Doi: 10.17408/RIREAGIAS050607082022.

Iwasaki M. (2020), Are in-person shareholder meetings outdated? The value of implicit communication, *Asian Journal of Law and Economics*, 11(3). Doi: 10.1515/ajle-2020-0045.

Jensen M. C., Meckling W. H. (1976), Theory of the firm: Managerial behavior, agency costs and ownership structure, *Journal of Financial Economics*, 3(4), 305-360. Doi: 10.1016/0304-405X(76)90026-X.

Kastiel K., Nili Y. (2016), In Search of the Absent Shareholders: A New Solution to Retail Investors' Apathy. *Delaware Journal of Corporate Law*, 41, 55.

Kiu C.T.T., Chan J.H. (2024), Firm characteristics and the adoption of data analytics in performance management: a critical analysis of EU enterprises, *Industrial Management and Data Systems*, *124*(2). Doi: 10.1108/IMDS-07-2023-0430.

Kraus S., Durst S., Ferreira J.J., Veiga P., Kailer N., Weinmann, A. (2022), Digital transformation in business and management research: An overview of the current status quo, *International Journal of Information Management*, 63, 102466. Doi: 10.1016/j.ijinfomgt.2021.102466.

Krieger F., Drews P., Velte P. (2021), Explaining the (non-) adoption of advanced data analytics in auditing: A process theory, *International Journal of Accounting Information Systems*, *41*. Doi: 10.1016/j.accinf.2021.100511.

Lafarre A., Van der Elst C. (2018), Blockchain technology for corporate governance and shareholder activism, *European Corporate Governance Institute (ECGI)-Law Working Paper* (390). Doi: 10.2139/ssrn.3135209.

Lattemann C. (2005), The use of ICT in annual shareholder meetings and investor relations: An examination of the German stock market, *Corporate Reputation Review*, 8(2), 110-120. Doi: 10.1057/palgrave.crr.1540243.

Maneesriwongul W., Dixon J.K. (2004), Instrument translation process: a methods review, *Journal of advanced nursing*, 48(2), pp. 175-186.

Matarazzo M., Penco L., Profumo G., Quaglia R. (2021), Digital transformation and customer value creation in Made in Italy SMEs: A dynamic capabilities perspective, *Journal of Business Research*, 123, pp. 642-656. Doi: 10.1016/j.jbusres.2020.10.033.

Moro Visconti R. (2020), Corporate governance, digital platforms, and network theory: information and risk-return sharing of connected stakeholders, *Management Control*, 2, pp. 179-204, Doi: 10.3280/MACO2020-002009.

Morrow Sodali (2020), *The 2020 European AGM season. Taking stock of the shareholder sentiment and looking forward to 2021*. Morrow Sodali.

Nili Y., Shaner M. W. (2022), Virtual Annual Meetings: A Path Toward Shareholder Democracy and Stakeholder Engagement. *Boston College Law Review*, 63, 123.

Obialor C., Ayileka A. (2020), COVID-19: Virtual AGM and the Need for Business Continuity, *SSRN Electronic Journa*. Doi: 10.2139/ssrn.3719125.

Oliveira T., Martins M. F., & Lisboa U. N. de (2011), Literature Review of Information Technology Adoption Models at Firm Level, *Review of Economics Studies*, *14*(1).

Olutoyin O., & Flowerday S. (2016), Successful IT governance in SMES: an application of the Technology-Organisation-Environment theory, *South African Journal of Information Management*, *18*(1), pp. 1-8.

Paoloni P., Manzo M., Procacci V. (2023), The impact of the pandemic crisis on the digital transition process of Italian SMEs, Suppl. 2, *Management Control*. Doi: 10.3280/MACO2023-002-S1005.

Patton M. Q. (2002), *Qualitative research & evaluation methods*, Sage.

Puklavec B., Oliveira T., Popovič A. (2018), Understanding the determinants of business intelligence system adoption stages an empirical study of SMEs, *Industrial Management and Data Systems*, *118*(1). Doi:10.1108/IMDS-05-2017-0170.

Rose J., Johnson C.W. (2020), Contextualizing reliability and validity in qualitative research: Toward more rigorous and trustworthy qualitative social science in leisure research, *Journal of leisure research*, 51(4), pp. 432-451.

Rosli K., HP Yeow P., & Eu-Gene S. (2013), *Adoption of audit technology in audit firms*.

Schwandt T. A., Lincoln Y. S., & Guba E. G. (2007), Judging interpretations: But is it rigorous? Trustworthiness and authenticity in naturalistic evaluation, *New directions for evaluation*, (114), pp. 11-25.

Schwartz-Ziv M. (2021), How shifting from in-person to virtual-only shareholder meetings affects shareholders' voice, European Corporate Governance Institute – Finance Working Paper (748). Doi: 10.2139/ssrn.3674998.

Seshadrinathan S., Chandra S. (2021), Exploring factors influencing adoption of blockchain in accounting applications using technology-organization-environment framework, *Journal of International Technology and Information Management*, *30*(1), pp. 30-68.

Siew E.G., Rosli K., Yeow P.H.P. (2020), Organizational and environmental influences in the adoption of computer-assisted audit tools and techniques (CAATTs) by audit firms in Malaysia, *International Journal of Accounting Information Systems*, *36*. Doi: 10.1016/j.accinf.2019.100445.

So I. G., Haron H., Gui A., Princes E., & Sari S. A. (2021), Sustainability reporting disclosure in Islamic corporates: do human governance, corporate governance, and IT usage matter?, *Sustainability*, *13*(23), 13023.

Stjepić A. M., Pejić Bach M., & Bosilj Vukšić V. (2021), Exploring risks in the adoption of business intelligence in SMEs using the TOE framework, *Journal of Risk and Financial Management*, *14*(2), 58.

Strätling R. (2003), General meetings: a dispensable tool for corporate governance of listed companies?, *Corporate Governance: An International Review*, 11(1), pp. 74-82. Doi: 10.1111/1467-8683.00303ù

Subramaniam R., Singh S.P., Padmanabhan P., Gulyás B., Palakkeel P., Sreedharan R. (2021), Positive and Negative Impacts of COVID-19 in Digital Transformation, *Sustainability*, 13(16), 9470. Doi: 10.3390/su13169470.

Tornatzky L.G., Fleischer M., Chakrabarti .K. (1990), The processes of technological innovation. *(No Title)*.

Ullah F., Qayyum S., Thaheem M. J., Al-Turjman F., Sepasgozar S.M.E. (2021), Risk management in sustainable smart cities governance: A TOE framework, *Technological Forecasting and Social Change*, *167*. Doi: 10.1016/j.techfore.2021.120743.

Van der Krans A. (2007), The virtual shareholders meeting: How to make it work, *Journal of International Commercial Law and Technology*, 2, 32.

Wang Q, Wang K. (2021), Does high-speed rail stimulate shareholder activism by small investors in China?, *China Journal of Accounting Studies*, 9(3), pp. 408-431. Doi: 10.1080/21697213.2021.2009178.

Widuri R., Handoko B. L., Prabowo I. C. (2019, May), Adoption of information technology in public accounting firm, *Proceedings of the 4th International Conference on Big Data and Computing* (pp. 198-202).

Yao S., Pan Y., Wang L., Sensoy A., Cheng F. (2022), Building Eco-friendly Corporations: The Role of Minority Shareholders, *Journal of Business Ethics*, pp. 1-34. Doi: 10.1007/s10551-022-05291-y.

Zhang F., Yang J., Xu Z., & Zhu G. (2018), Large shareholder participation behaviors, managers' risk-taking and firm innovation performance: A shareholder activism perspective, *Nankai Business Review International*, 9(1), pp. 99-115.

Digitalization and Performance Management Systems: A Shipping Agency Case Study

Assunta Di Vaio[*], *Luisa Mastellone*[**],
Luigi Lepore[*], *Luisa Varriale*[***]

Abstract:

This study examines how the digitalization of information processes embraced by shipping intermediaries (i.e. shipping agencies) within supply chain management (SCM) changes performance management systems (PMSs). This exploratory study uses the lens of stakeholder theory and adopts a case study methodology to investigate a shipping agency based in Italy. It uses primary data collected from semi-structured interviews and secondary data. The data were collected from November 2022 to March 2023. The results indicate that the digitalization of information accounting processes has boosted the adoption of key performance indicators (KPIs) to monitor and evaluate the effectiveness and efficiency of operational processes. The results also reveal that, in the agency relationship between agent and shipowner, the agent does not use the benefits of PMSs to identify strategic KPIs for the business. This study highlights that when adopting PMSs in shipping agencies, it is necessary to include both an information accounting and an organizational dimension. Managers should be involved in training programs supporting a culture of sharing information through digitalized systems. The main limitation of this study, due to its exploratory nature, is the lack of analysis including the shipowner's perspective and the impossibility of generalizing based on the results. To the best of our knowledge, this is the first study to investigate digitalization, PMSs, and SCM in terms of the organizational-accounting frameworks of shipping agencies.

Keywords: Digitalization, Performance Management Systems (PMSs), Shipping Intermediaries, Shipping Industry, Stakeholder Theory, Key Performance Indicators (KPIs).

---

[*] Department of Law, University of Naples "Parthenope", Naples (Italy). Corresponding Author: susy.divaio@uniparthenope.it.

[**] Marinter Shipping Agency Srl, Naples (Italy).

[***] Department of Economics, Law, Cybersecurity and Sports Science. University of Naples "Parthenope", Naples (Italy).

Management Control (ISSN 2239-0391, ISSNe 2239-4397), 2024, 2 – Special Issue
Doi: 10.3280/ MACO2024-002-S1009

1. Introduction

In the last two decades, scholars' and practitioners' attention to the theme of the digital transition – specifically digitalization within any organization, industry, and area – has increased. Digitalization significantly involves and affects the overall supply chain of products and services (Pargman et al., 2023). The digital transition increasingly involves supply chain management (SCM) and the business organizations that are part of it. Digitalization appears to be the main challenge faced by all actors within SCM; indeed, firms face the challenge of making decisions about the implementation of advanced technologies and digitalized business processes in many areas, including accounting and human resource management, among others (Di Vaio et al., 2023). This transition requires the radical transformation of the environments, processes, and businesses that are primarily responsible for effective and efficient organizational processes to achieve high performance.

In this scenario, intermediaries play a key role in facilitating transactions and ensuring effective and efficient SCM. More specifically, shipping intermediaries operate in the highly complex sector of the shipping industry, which is one of the most influential for the fate of the world economy (Nikitakos and Lambrou, 2007). Digital transformation in the shipping sector yields both beneficial and adverse outcomes, as has been noted by various scholars (Balci, 2021; Quitzau et al., 2018). Accordingly, shipping intermediaries need to confront the challenges posed by digitalization and prioritize the enhancement of their performance management systems (PMSs). To address these challenges, many shipping intermediaries tend to implement PMSs based on digitalization (Xu et al., 2019). These systems enable them to oversee and assess their performance by using industry-specific key performance indicators (KPIs), including delivery punctuality, information precision, and customer contentment.

The implementation of digitalization-based PMSs requires a holistic view that considers the interests of all stakeholders in accordance with the stakeholder theory based on the dependence of resources (Freeman, 1984; Freeman et al., 2010). Shipping intermediaries must therefore consider the needs and expectations of all stakeholders – including shipowners, customers, logistics service providers, carriers, and port authorities – to maximize the value of the entire supply chain, as well as the sharing of resources (including digital ones). While qualitative studies have predominantly been used to examine the shipping industry, ongoing changes such as the evolution of PMSs in shipping intermediary firms due to digitalization are notable. These changes often stem from decisions made by shipowners, with effects that extend to the managerial accounting systems of shipping intermediaries – that is, the shipping agencies. The persistence of this transformation is largely attributed to industry characteristics. Also, the intermediary firms within the industry, which are commonly small and family-owned firms, make them reluctant to share information and do not lend themselves easily to quantitative studies. Therefore, this exploratory case study – in line with stakeholder theory and based on the dependence of resources – addresses the following research question:

(Q1) Does digitalization change the operational processes and PMSs of shipping intermediaries?

The remainder of this study is organized as follows. The theoretical background section introduces the main issues regarding the digital transition, digitalization, and PMSs for the intermediary organizations through the lens of stakeholder theory. The methodology section explains the case study methodology adopted. The results section describes the data analysis and results. The discussion section critically explains the results, implications, and limitations of this study and offers directions for further research. The final section briefly provides some final remarks and the conclusions of this study.

2. Theoretical Background

There has been significant research into the digitalization of organizational-accounting processes across various industries over the last three decades. This has led scholars and practitioners to focus on analyzing the factors influencing digitalization, its effects, and the intricate decision-making processes involved. There is also growing interest in understanding how digitalization affects firm performance, particularly by enhancing operational processes and procedure (Calderon-Monge and Ribeiro-Soriano, 2024; Zhai et al., 2022).

Digitalization is the use of digital technologies to change the operational processes, thus providing new revenue- and value-producing opportunities. It creates more opportunities for value creation, which leads to greater competitive advantages (Büyüközkan and Göçer, 2018). Digitalization, traceable to various platforms, websites, social media, artificial intelligence (AI), blockchain technology, machine learning, cloud computing, 5G Internet, the Internet of Things (IoT), big data analytics, virtual reality systems, and connected devices, has led to "datafication" (Di Vaio and Varriale, 2020a; Gupta and George, 2016). Digitalization can thus be defined as the integration of digital technologies into all those components of everyday life that can be digitalized (Gray and Rumpe, 2015). Digital technologies have changed business processes and procedures, and organizations have been forced to adapt (Attaran, 2020). Digital technologies, with the related digital transformation process, can significantly affect how firms and other organizations perform, especially the overall SCM, with relevant implications for their PMSs. This can be observed in the maritime industry and involves all actors, including ports, shipping agencies, and shipping companies, among others (Ferreira, 2024; Di Vaio and Varriale, 2020b).

Decision-making and management processes are closely related to the concept of PMSs; they are characterized by two components: efficiency and effectiveness. PMSs are affected by information technology and digital technologies, which can drastically change how performance is measured (Neely, 1999), as firms seek to make PMSs dynamic in deploying changes in the external and internal environments (Bititci et al., 2000). Highly developed information systems can thus create successful PMSs initiatives (Bourne and Neely, 2003). Considering digitalization as a key enabling factor to improve PMSs, the basic idea is to define the best systems for more effective and efficient processes with positive effects on firm performance (Holmström et al., 2019) that are also able to drive the managers undergoing the digital transition to achieve high performance. The PMSs consist of a set of metrics useful for gauging the efficiency and effectiveness of actions (Neely, 1994). To use these performance measurement outcomes, firms must be able to realize the transition towards PMSs (Amaratunga and Baldry, 2002). According to previous studies, a performance measurement system (PMS) can be seen as the combination of evolving formal and informal mechanisms, processes, systems, and networks used by business organizations to convey the key objectives and goals defined by management. It also assists the strategic process and ongoing management through activities such as analysis, planning, measurement, control, rewarding, and broadly managing performance to support and facilitate organizational learning and change (Mancini and Piscitelli, 2018; Ferreira and Otley, 2009; Otley, 1999). Therefore, PMSs include "general processes, both the formal mechanisms, processes, systems, and networks used by organizations, and the more subtle, yet important, informal controls that are used (Ferreira and Otley, 2009, p. 264). PMSs also influence managerial behavior, thus ensuring that managers' knowledge and motivation are suitable for pursuing organizational goals (Otley, 1999).

Some scholars have suggested that advanced PMSs supported by digital technologies are useful, especially for collecting information within and between firms by intensifying inter-organizational relationships (Mancini et al., 2021; Mancini and Piscitelli, 2018; Mancini, 2016), as well as for their positive impact on workers' performance, satisfaction, and expectations (Rotondo et al., 2019; D'Onza et al., 2015). PMSs require the assimilation of various indicators – classified as service, management, quality, productivity, and efficiency – to consider significant aspects such as information technology, value chains, core values, value creation, institutional pressures, and stakeholder engagement (Ghobakhloo et al., 2023; Chen et al., 2015). The integration of these indicators into PMSs is also empowered by the introduction of digital technologies (Norreklit and Cinquini, 2023; Corsi et al., 2017; Cinquini et al., 2013).

In this general portrait, intermediary players can adopt PMSs to exploit the advantages derived from the capacity to process multiple pieces of information simultaneously, which in turn can influence directly and coordinate the different flows (Saleheen et al., 2018). The supply chain performance measurement model is likewise the result of linking the various intermediary players (Gunasekaran et al., 2004). In the last two decades, the literature has paid particular attention to the issue of intermediary players, who have been defined as facilitators of innovation to highlight their active engagement in network- and system-building activities (Klerkx and Aarts, 2013). At the same time, intermediaries are entities who shape transmitted elements, such as consultants providing specialized services within the supply chain, or actors merely facilitating the flow of (without altering) goods or knowledge (Stewart and Hyysalo, 2008; Latour, 2005). Their role in innovation facilitation is examined in the context of dynamic intermediary ecology, where different players adapt their positions based on skills and operational models. This dynamic ecosystem necessitates intermediary roles to evolve alongside process innovations and technological maturity, thus supporting the entire digital transition overall (Klerkx and Aarts, 2013).

2.1. Performance Management Systems in Shipping Intermediaries through the Lens of Stakeholder Theory

Shipping intermediaries include brokers, custom brokers, and especially shipping agents, also defined as ocean freight intermediaries (Clott, 2000). They can contribute to the digital transition of the shipping industry as a network or assemblage of players (Heilig et al., 2017). In such a network, digital technologies can facilitate the exchange of information between the different shipping intermediaries, while also promoting real-time information and reducing paper consumption. Digital technologies can thus support shipping intermediaries by positively affecting their PMSs (Tijan et al., 2021). The shipping industry is characterized by great complexity, which makes it particularly sensitive to the digital transition. In the port supply chain – and the shipping industry in general, which is characterized by a high level of competition – the fundamental role of PMSs is fortified by the integration of quality management tools to ensure survival in turbulent environments (Otheitis and Kunc, 2014; Cagnazzo et al., 2010). Indeed, the adoption of quality management tools is considered more of a marketing tool in the shipping industry (Goulielmos et al., 2008), as it enhances operational performance (Triantafylli and Ballas, 2010), which naturally includes forms of PMSs. Quality management tools such as the specific indicators included in ISO certifications can be integrated into PMSs, supporting high performance. The literature in the last decade has focused on intermediary players, but the topic of shipping intermediaries has received less attention (Surucu-Balci et al., 2024; Lambrou et al., 2019). Stakeholder theory, which emphasizes resource dependence and employs descriptive and instrumental approaches (Preston, 1990; Bailur, 2006; Freeman, 1984), has been extensively applied in SCM, particularly within the shipping industry's digitalization focus. However, there is a scarcity of studies examining its adoption in the context of integrated digitalization and PMSs among shipping intermediaries. Accordingly, this exploratory study adopts a stakeholder theory approach, emphasizing resource dependence, to examine how shipping intermediaries integrate technology solutions into their PMSs within SCM. This approach offers valuable insights into how these stakeholders enhance their overall performance by optimizing organizational and information-accounting processes. The descriptive theory of stakeholders is also employed to delineate the nature and variety of technology solutions and PMSs over time, thus providing a comprehensive understanding of their evolution within the shipping industry.

3. Research Methodology

This exploratory study analyzes the Marinter Shipping Agency Srl, which is a multi-firm shipping agency operating in the port of Naples (Italy). It has 12 employees and had a turnover of EUR 4.5 million in 2022. This shipping agency was chosen for several reasons. First, this firm had a high volume of activities and profits in the last three years (https://www.fatturatoitalia.it/), which indicates its considerable position in a highly competitive industry, despite its small size in terms of employees and being predominantly family run. Second, this firm consists of a multi-firm shipping agency. Finally, over the last 10 years, it was involved in a complex and large process of organizational change that involved institutional pressures for adopting technology within their organization for managing all their activities, operations, and processes.

According to Bichou and Bell (2007), shipping agencies are appropriate intermediaries for SCM, as they handle several operations in the ship–port interface. The case study methodology uses qualitative analysis to investigate unexplored phenomena (Scapens, 2004; Gibbert et al., 2008; Eisenhardt, 1989) by collecting empirical material (Tronvoll et al., 2020). The need to use a case study approach here is related to the investigation of a contemporary phenomenon in its real-life context, especially when the boundaries between phenomenon and context are not evident (Yin, 1981). Following this approach, it is possible to separate phenomena from their contexts and examine specific variables (Yin, 1994). The choice to adopt a single case study related to a specific organization also specifically allowed us to obtain insights that would not be traceable in other situations. This choice also represents "a great way to motivate" a research question and persuade readers and reviewers (Siggelkow, 2007). A case study can be used to explain the development of a phenomenon over an extended period (Ahrens and Chapman, 2006), and some scholars have focused on case studies (Voss et al., 2002; Crotty, 1998) to provide further insights and to overcome the limitations resulting from a lack of replication (Yin, 2006; Eisenhardt, 1989).

This study used both primary and secondary data. The data were collected from November 2022 to March 2023. The primary data are represented by interviews (Table 1), which were supported by a semi-structured questionnaire containing sections related to the following specific sections/areas of investigation: general information (age, gender, role and function of the manager interviewed; seniority in the organization and in the industry and background of the manager interviewed; short history about the shipping agency; governance and strategy of the shipping agency; and so forth); digitalization (digital transformation about the operational processes within the shipping agency investigated, timing schedules about the digitalization process, specific software adopted, description of the main operational processes for each specific area, and so forth); new technologies; and performance systems (description about the development and adoption of performance systems, timing schedules, and so forth). All the sections were debated during the interviews, thus providing details about if and how, within the shipping agency investigated, digitalization was linked to their PMSs to improve operational processes and overall performance.

The interviews were conducted by one of the authors, who is a member of the board of directors of the shipping agency investigated. The managing director, the chief financial officer (CFO), and the chief operating officer (COO) were interviewed in the period from February to March 2023. Each interview lasted about 50 minutes. The interviews, conducted during face-to-face meetings, were recorded using a digital device. The recorded interviews were shared among all the authors, who then discussed them and proposed possible different readings about them on the topic of analysis. To understand the data deriving from the interviews better, the authors analyzed the secondary data together. The secondary data, collected during the same interviews, include non-financial documents, reports produced by software, and emails from business partners, which are useful for identifying the evolution of the shipping agency investigated and some of the key performance indicators (KPIs) considering digitalization and PMSs together.

The secondary data were also analyzed by the managing director, CFO, and COO during the meetings to collect further comments and suggestions to gain a better understanding of the business processes and the actions taken within them for PMSs aimed at ensuring higher performance. During the interviews, the functioning of the software *TeamSystem Enterprise*, *Navision*, *Afsys*, *Hyperion*, and *Global OA* was also demonstrated. As the literature suggests (Glesne and Peshkin, 1992), the business and organizational processes were directly observed during the interviews. The direct observations made it possible to reveal insights into the structures, processes, and behaviors of the people already interviewed, which would not be accessible through other data collection methods (Furlong, 2010). Such triangulation of data sources, including primary data, secondary data, and direct observations, allowed us to develop a comprehensive understanding of the phenomenon and verify the test validity through the convergence of information originating from different sources (Patton, 1999).

Table 1 - Interviewees' Information

MEETING/INTERVIEW WITH	NO. OF MEETINGS AND INTERVIEWS	TOTAL DURATION (MIN)	SECTIONS
Managing Director	1	50	• General Information • Digitalization • New Technologies • Performance Systems • Governance • Strategy
Chief Financial Officer (CFO)	2	30; 20	• General Information • Digitalization • New Technologies • Performance Systems
Chief Operating Officer (COO)	1	50	• General Information • Digitalization • New Technologies • Performance Systems

Source: Authors' processing

4. Results

Since 1985, the year of its foundation, the investigated shipping agency has tried to keep up with technological developments. From the start, it decided to equip itself with *Telex* to facilitate the exchange of information with shipowners, other shipping agents around the world, and, especially, the ships for which it had acquired the mandate. For several years, despite the advent of the fax machine, Telex was the main interface between the shipping agency and the other players in the seaport supply chain. Telex was therefore the first and fundamental technological tool used in the shipping agency business area.

The shipping agency and integrated logistics business areas primarily require technological tools that facilitate communication between the shipping agency, shipowners, ships, other shipping agents, port authorities (e.g. harbor masters), and the actors and intermediaries in the seaport supply chain. In these two business areas, in 1997, the launch of *Microsoft Office 97* software represented a turning point for the shipping agency. Telex was supplanted by *email*, a more practical and immediate tool. Email provided considerable advantages to all the characteristic and integrative functions implemented by the shipping agency but obliged the latter to train its employees in the use of this new tool. The digital innovation that has brought about major changes to the characteristic functions of shipping agency and integrated logistics is the *Port Management Information System* (PMIS). As a tool provided for by legislation, the PMIS was adopted by the investigated shipping agency in 2014, when it became operational in the port of Naples. With the advent of the PMIS, Marinter's employees no longer needed to visit the harbor master's office to carry out their paperwork but began to complete it in front of their PC in the office. While the exchange of information is supported by tools such as Telex, e-mail, and the PMIS, the accounting processes in the shipping agency and integrated logistics business areas require the implementation of specialized software, such as *Sysint*.

4.1 From Sysint to TeamSystem Enterprise

In 1995, Marinter decided to acquire *Sysint*, which is a computer program released by *TeamSystem*; its adoption represented a breakthrough in the firm's accounting processes. The idea of using software for accounting management was initially promoted by an external financial advisor. The shipping agency's business activity experienced a big increase in 1995, so it was no longer possible to manage the accounting movements externally; internal accountants therefore had to start reporting. The external financial advisor's suggestion to acquire this software was confirmed by the managing director:

> *We were only prompted to purchase Sysint at the suggestion of our external financial advisor. At that time, we had no knowledge of management software. The choice fell on Sysint, as one of our accountants already knew some of the most basic functions of such software.*

The adopted software primarily facilitated accounting tasks through double-entry bookkeeping and balance sheet preparation. However, manual invoicing was handled using the Office package. Sysint was limited to use by accounting and administration personnel, primarily based in the agency's back office. The adoption of this software allowed the accounting department to manage accounting processes independently. Despite this, an external financial advisor continued to oversee tax compliance and provide consultancy services.

In 2013, following the implementation of regulations regarding electronic invoicing for private transactions, the shipping agency was obliged to upgrade its software to the latest version of Sysint, known as TeamSystem Enterprise. It has the typical characteristics of enterprise resource planning (ERP) software (Davenport, 1998) with a modular architecture, in which the information can be accessed and input by different people from different locations. Everyone can access the software and find any kind of information (Quattrone and Hopper, 2005). The shipping agency could, through the modules, handle different functions, such as administration, finance, and tax returns, budget, and management control. The shipping agency primarily makes use of the administration, finance, tax returns, budgeting, and management control modules, which are considered essential for supporting accountancy tasks. These modules make it possible to manage initial notes, monitor economic and asset status in real-time, and prepare balance sheets. TeamSystem Enterprise streamlines the invoicing process for the shipping agency. Invoices created through this software are seamlessly integrated into accounting records, ensuring compliance with electronic invoicing regulations when submitted to the appropriate authorities.

In this direction, the organizational process and the specific activities for the accountants are significantly simplified and made faster, and monitoring and control are effectively supported. Paper consumption is also significantly reduced. The CFO said: "In my opinion, cloud computing represents a very useful innovation. Thanks to this, I can control each aspect at any time and everywhere." Following the adoption of this last software, the accounting department was reorganized, including the CFO and three other individuals, all women around 40 years of age, with a secondary school education. They exhibit significant flexibility in grasping digital technology features, as confirmed by the CFO: “When I ask my collaborators to learn a new TeamSystem Enterprise feature, they find the video tutorials and implement the knowledge acquired from them in a short time.”

The accounting department of the shipping agency exclusively learned about TeamSystem Enterprise features through video tutorials provided by the software house. Despite tutorials on KPIs being available, they were not deemed relevant by the accounting department. The CFO said: “The development of KPIs is not something our management pays attention to.”

4.2 From *Emulazione* to *Navision*

The container cargo segment, unlike other divisions, underwent substantial digital transformation due to agreements with Intersea Genova Srl and the establishment of Yang Ming (Napoli) Srl. This led the shipping agency to adopt management systems such as Emulazione and Navision software. These programs, created by the Italian general agent’s programmers and shared with the shipping agency in 1997, are operational software and primarily targeted the operations department. They facilitated bill of lading processing, freight rate corrections, and global data transmissions (Proctor, 1997). This software also facilitated the acquisition of new skills among employees at the shipping agency, with a notably brief training period. The managing director stated:

> *As soon as we received the mandate, after just a week, we already had the programmers of the general agent in Genoa in our office who were installing Emulazione on our computers. In practice, our employees in the operations department did the training directly in the field.*

Navision, unlike Emulazione, is a comprehensive ERP system developed by Microsoft Dynamics. Yang Ming (Italy) Spa, the Italian general agent, obtained Navision and extended its use to Yang Ming (Napoli) Srl in 2007. Yang Ming (Napoli) Srl efficiently handles operational tasks with this software, including managing export container cargo bookings and issuing import cargo delivery orders. Export container cargo bookings, which are initiated by freight forwarders and confirmed by shipping agents, are the official documents securing the reservation of space on a vessel. Conversely, import cargo delivery orders authorize freight forwarders to retrieve containers from the port. Freight forwarders are the primary clients of shipping agents in container traffic. Navision not only facilitates operational tasks but also streamlines accounting management, as it features automated invoicing. This automation records each service-related financial transaction in the initial note, minimizing the accountants' workload. Navision also enables the generation of balance sheets directly from initial note entries and facilitates tax obligation settlements. Navision software benefits both SCM stakeholders and the accounting department, enhancing overall efficiency and effectiveness. The CFO said:

> *The automatic invoicing and the direct writing of the relative movement in the first note made it possible to facilitate and reduce the work of the accountants. It has allowed our department to focus more on other aspects of accounting as well.*

Although the adopted software allows the accountants to focus on other aspects of their work, no attention is paid to PMSs or KPIs. Navision has always supported the development of KPIs, but the shipping agency has not used these tools because they have never been required by management. In the same way, the COO highlighted that Navision has changed the way the operations department works:

> *Before the arrival of Navision, bookings were made manually on a form we prepared in Word and reported in a register kept by us. Instead, now the bookings are entered by the operations department in Navision, which in turn is able to generate them on paper or digitally. Digital bookings are then sent to customers via email.*

Employees underwent training conducted by Microsoft Dynamics at the general agent's Genoa offices to hone skills relevant to their roles. The shipping agency, a shareholder of Yang Ming (Napoli) Srl, pays Yang Ming (Italy) Spa an annual flat-rate fee to use Navision. This fee covers software access, training provided by the software house, and IT assistance from the general agent. The favorable fee stems from the longstanding trust between the general agent and Marinter. The adoption of both software programs has become vital for the shipping agency and was facilitated through its affiliate Yang Ming (Napoli) Srl. Given the dynamic nature of the container sector, proficiency in these systems is essential for adapting swiftly to technological advancements.

4.3 Afsys, Hyperion, and Global OA: Software Developed by the Yang Ming Marine Transport Corporation

The evolution of the container cargo sector led Yang Ming Marine Transport Corporation to develop Afsys, an autonomous ERP software in

2012. This software manages the entire process from booking issuance to bill of lading generation, including freight correction and data transmission for global agents. Designed by Information Dynamics, this software focuses solely on operational functions and provides a centralized system. It enables Yang Ming to oversee and coordinate activities across its global network of agents, thus enhancing control and standardizing procedures. Adoption of this software consolidates the shipowner's authority, while establishing clear rules and procedures that agents must adhere to, thereby streamlining decision-making processes. The limitation of decision-making power through the software was mentioned by the managing director: "With Afsys, we are controlled by the shipowner at any time." The centralized structure of the adopted software facilitates data gathering for KPIs. Consequently, Yang Ming (Napoli) Srl, operating as the sole agent of Yang Ming Marine Transport Corporation in the port of Naples and affiliated with the investigated shipping agency, was mandated to implement this software.

This software is used throughout the export process, starting from the initial booking request by freight forwarders to the confirmation of the booking and the generation of the bill of lading. The investigated software is also integrated into the INTTRA platform, enabling customers, particularly freight forwarders, to submit booking requests digitally, thus eliminating the need for traditional email communication. Thanks to this software, the export process has undergone a digital transformation that has led to increased speed and efficiency while also reducing paper use in the operations department. However, the implementation of the software required a training phase for employees and caused initial distress. The intensive week-long training, conducted by Information Dynamics representatives at the general agent's offices in Genoa, was entirely in English, which posed a challenge for employees with lower English proficiency levels – particularly those in operational roles with a B1 level of English proficiency. The COO said:

> *The main difficulty about the English language was accompanied by the need to memorize all the Afsys processes immediately. Indeed, during the training phase, no manuals or other types of material that could help us to carry out the functions were released.*

When learning the functions of the software used, the employees faced two main difficulties: the use of the English language during the training phase and the lack of a manual to support their work, which was not available to limit the disclosure of confidential information.

The use of this software by the shipping agency comes at no expense.

Instead, the general agent assumes responsibility for covering the shipowner's annual fee. This arrangement fosters a trusting relationship, enabling the shipping agency to reduce expenses associated with conducting cargo container sector operations. Nonetheless, Yang Ming Marine Transport Corporation maintains oversight over its agents' accounting procedures. More specifically, the Hyperion software, tailored to the shipowner's specifications, requires agents to furnish monthly reports and budgets, thus ensuring ongoing involvement in financial processes. The compiled reports and budgets form the foundation for the shipowner's consolidated financial statements. As a subsidiary of the Taiwanese shipowner, Yang Ming (Napoli) Srl is tasked with preparing these reports and budgets, which play a vital role in the consolidated financial statements. The data submitted via Hyperion by each shipping agency are subsequently used by the shipowner to establish precise financial KPIs.

Hyperion, the next software used, was developed by Oracle; it is a web-based program with archival capabilities that enable convenient access to uploaded reports from any device. This eliminates the need for physical archiving, further reducing paper use. However, the requirement for the shipowner to input data into specific accounts within the same software for consolidated financial statements places significant pressure on the shipping agency's accounting department. The stress from meeting the shipowner's demands and using this last software sometimes compels accounting staff to work overtime to ensure all data are entered promptly. The CFO said: "Every month the shipowner stresses us to complete in Hyperion the reports he requests and within the deadlines he dictates."

The accounting department staff received training on Hyperion via an instruction manual from Oracle. The use of this software enables the department to align with the financial KPIs mandated by the shipowner, enhancing performance evaluation. Because this software is provided free by the shipowner to Yang Ming (Napoli) Srl, the shipping agency bears no expense. Thus, the agency facilitates its accounting staff to familiarize themselves with essential PMSs tools without financial outlay. Moreover, by implementing Hyperion, the shipowner introduced the Global OA software, which enables shipping agents worldwide to input container loading and discharging lists, thus facilitating the creation of stowage plans. These plans are decisive for minimizing costs by reducing unnecessary loading and unloading movements at ports (Ding and Chou, 2015). Global OA not only gathers these lists but also generates operational KPIs for the shipowner. Through Yang Ming (Napoli) Srl, the shipping agency enters loading and discharging lists into Global OA for each ship call. This digital recording ensures easy access and provides a reliable archive. The COO is the primary user of Global OA, having learned its functionalities from the instruction manual provided by Oracle. The COO said: “I had no problems using Oracle. The interface is very simple, and access is via the web browser.” The use of Global OA does not involve any cost for the shipping agency, which operates through Yang Ming (Napoli) Srl.

4.4 Trust: Software Developed by the United Arab Shipping Company

Trust oversees all operational facets and manages the export process from booking requests to bill of lading issuance, including tasks related to data transmission and freight rate adjustments. Trust also plays a role in the import process by issuing delivery orders, a function not shared by Afsys. Unlike Afsys, Trust’s jurisdiction encompasses both export and import processes (Figure 2 and Figure 3). Like Afsys, Trust operates in a centralized manner, enabling the shipowner to oversee the activities of its global network of agents. The implementation of Trust software for managing both export and import processes significantly reduced paper use, although it created challenges during the training phase due to its complexity. Training sessions lasted for a few weeks and were conducted at the workplace by experienced personnel from the general agent in Genoa. Despite the software’s complexity, it fostered a closer relationship between the shipping agency and the shipowner. Previously, as a sub-agent, the agency had to communicate with the shipowner through the general agent, but Trust minimized this intermediary step. Like Afsys, Trust does not incur costs for the shipping agency; instead, the general agent covers the annual expenses. Leveraging the trust built over time with the general agent, the shipping agency gains access to digital tools without financial burden.

4.5. PMSs for the Shipping Agency

The evolution of digitalization within the examined shipping agency probably changed its PMSs. Collaborations with various partners likely prompted a heightened focus on performance control and monitoring. The partnership with a Taiwanese shipowner and an Italian general agent resulted in the formation of Yang Ming (Napoli) Srl, the introduction of advanced digital tools, and influenced the agency’s performance monitoring. Consequently, the PMSs in container cargo operations underwent adjustments. Shared software like Hyperion, Afsys, Global OA, and Navision facilitated more precise and continuous performance monitoring across all partners. More specifically, the shipowner’s KPI development and monitoring through dedicated software directed the agency toward structured PMSs. The shipowner's aim to incorporate Yang Ming (Napoli) Srl into its financial statements also amplified the significance of shipowner-defined KPIs, which are tracked using specialized software.

Using Hyperion, the Taiwanese shipowner oversees the financial performance of its global shipping agents and employes specific KPIs for assessment. Financial KPIs are assessed quarterly via the Trial Balance process, using data provided by the shipping agency, a shareholder of Yang Ming (Napoli) Srl. This allows for comparison between actual and anticipated performance, while enabling the shipowner to seek clarification on discrepancies. Notably, financial KPIs are not shared with Yang Ming (Napoli) Srl, which contributes to the shipowner's overarching PMS without altering its own. The primary impact on Yang Ming (Napoli) Srl is the obligation for its accountants to furnish required information to the shipowner within defined deadlines. This has not led Yang Ming (Napoli) Srl to establish its own financial KPIs but has necessitated more precise performance monitoring. Similarly, the shipowner's discretion in disclosing operational KPIs, calculated through Afsys and Global OA, has resulted in limited visibility for Yang Ming (Naples) Srl.

The Afsys software offers a range of operational KPIs for firms. Yang Ming (Napoli) Srl primarily uses the Freight Checking Report Index, which is periodically communicated via email. This index, which is tied to turnover, quantifies the corrections made to freight rates on bills of lading sent electronically in the previous month. Monitoring this report motivates the company to enhance the accessibility and functionality of software, including Afsys. This focus on improvement is spurred by the desire to optimize operational efficiency and effectiveness.

Another operational KPI provided by Afsys is the INTTRA Booking Requests Index. This index is linked to turnover and measures the number of export booking requests processed on the INTTRA platform. In April 2023, Yang Ming (Napoli) Srl reported a result of 0 for this KPI, which indicates that no bookings were requested through INTTRA that month. The INTTRA Booking Request Index thus motivated Yang Ming (Napoli) Srl to better integrate its information with that of its customers, such as freight forwarders. Similarly, the Global OA software provides one KPI for Yang Ming (Napoli) Srl: The Operational Activity Performance Index. This index evaluates each agent's ability to finalize loading and discharging lists within 24 hours of the ship's departure, for both loading and discharging ports, respectively. Collected regionally, this KPI aims to enhance Yang Ming (Napoli) Srl's use of the Global OA software by improving operational efficiency. The efficiency in reaching the shipowner's goals can thus be effectively assessed using any of these three indicators (Table 2).

Table 2 - Key Performance Indicators (KPIs)

KPIs	Software	Value	Container Cargo
Freight Checking Report Index	Afsys	0%-100%	Yes
INTTRA Booking Requests Index	Afsys	0%-100%	Yes
Operational Activity Performance Index	Global OA	0%-100%* **on a regional basis*	Yes

Source: Authors' processing of Marinter's data

5. Discussion

The innovation process in accounting systems and PMSs within the investigated shipping agency followed the same evolution as IT and digital advances in general. This was confirmed by Granlund and Mouritsen (2003), who even argued that "from its earliest days, accounting information and technology were related." Similarly, it confirms how the adoption of specific digital technologies has transformed the data and information management protocols within the studied firm, while also influencing the working methods of accountants. Digitalization changes accounting practices (Karimi and Walter, 2015). Our results confirm that digitalization represents a key factor in changing PMSs, which becomes easier and more immediate. Inefficiencies are also reduced. According to Neely (1999), digital technologies can change how performance is measured, with positive implications for organizational processes as it improves them and makes them more effective and efficient. Indeed, in the case study analyzed, the introduction of software led to new forecasts and reports that made it possible to reduce costs and encourage a cultural and behavioral change (Duan et al., 2019). Marinter's collaboration with Yang Ming (Italy) Spa and Yang Ming Marine Transport Corporation in 2003, which resulted in the formation of Yang Ming (Naples) Srl, accelerated the digitalization of accounting systems and affected the PMSs of all stakeholders. Data from the PMSs of these business organizations are processed concurrently, directly shaping and aligning various operational processes (Saleheen et al., 2018). This suggests that PMSs and management control are no longer confined to internal operations but are influenced by external factors as well (Marchi, 2011).

The shipping agency analyzed in this study, in collaboration with the other two involved parties, was not only able to introduce cutting-edge digital software but also to enhance PMSs. The Taiwanese shipowner and the Italian general agent ere intermediaries influencing the adoption of innovations by gathering and disseminating information, thus facilitating digitalization within the shipping agency (Lichtenthaler, 2013). This role aligns with the concept of "facilitators of innovation" (Klerkx and Leeuwis, 2009). Moreover, the integration of different PMSs through software sharing among the involved organizations was reinforced by the shipowner's need to consolidate the financial statements of all parties involved into its own budget. The collaborative use of accounting software among stakeholders facilitates the processing of the KPIs mandated by the shipowner, which include different dimensions, but primarily focus on the effectiveness and efficiency of operational processes, as well as economic, environmental, and social factors. This holistic approach can support the fulfillment of the shipowner's obligation to disclose corporate social responsibility.

The changes in the shipping agency studied here highlight the capacity to enhance operational processes and overall supply chain performance through digitalization. This transformation is interpreted positively through PMSs and relationships with stakeholders. Specifically, software provided by shipowners (Afsys, Hyperion, and Global OA) has altered employee and accountant behavior. This software, which can generate specific KPIs, has redefined the accountants' role, empowering them as performance analysts and report preparers for shipowner management. The firm's accountants thus operate in a dynamic environment where their capabilities foster real-time communication between shipping agency staff and Yang Ming Marine Transport Corporation managers during a digital transition.

The lack of well-structured PMSs forced the accountants of the shipping agency studied to adapt to software tools to process the KPIs mandated by the shipowner. Leveraging digital technologies alongside quality management tools from certifications like ISO 9001:2015, ISO 14001:2015, and ISO 45001:2018 facilitated the design of KPIs to meet high performance objectives. KPIs such as the Freight Checking Report Index, INTTRA Booking Request Index, and Operational Activity Performance Index fostered the adoption of more sophisticated PMSs, while also promoting effective and efficient practices in the management of operations internal to the shipping agency and between it and the shipowner, as well as with other SCM firms. The implementation of advanced software enabled the shipping agency to enhance dematerialization, reducing paper consumption and costs (Crawford, 2017). Consequently, the strong link between digitalization and PMSs within the shipping agency has positively influenced operational processes in the organizational-accounting architecture, enhancing effectiveness, efficiency, and profitability.

5.2 Academic and Managerial Implications

This study explored the academic significance of a shipping intermediary within SCM during a digital transition. Intermediaries are recognized as pivotal agents driving the shift toward more socio-technical systems (Kivimaa et al., 2019). This study contributes to the literature by expanding the understanding of intermediaries, with a specific focus on shipping agents. It also highlights the ongoing investigation into how digitalization influences the PMSs of intermediary organizations. This study advocates for a deeper exploration of the interplay between PMSs and digitalization within a dynamic, evolving, and competitive landscape (Sahlin and Angelis, 2019).

The managerial implications deriving from this study suggest that, to develop more structured PMSs, the shipping agency should implement training programs for its employees to impart PMSs-related tools, such as KPIs. The training programs should concern both knowledge of the KPIs and ways to use software to process them. Training programs must also enhance cultural change, which must involve not only the employees who process the KPIs but also the management reliant on KPIs for performance control. The need for this cultural change is also evident from the interviews conducted with the managing director, the CFO, and the COO, who demonstrated that they have minimal knowledge about KPIs. The shipping agency investigated in fact still relies on traditional financial reporting tools to monitor performance.

6. Conclusions

This case study highlighted the changes brought about by digital technologies on PMSs. It acknowledges the ongoing uncertainty surrounding the relationship between digitalization and PMSs, despite scholarly attention, and Sahlin and Angelis (2019), Lee et al. (2021), and Dubey et al. (2022), among others, have contributed to this discourse. The investigation into the PMSs of shipping intermediaries, as shipping agents, remains ongoing, despite previous research on PMSs in the shipping industry (Otheitis and Kunc, 2014). After analyzing documents and conducting interviews, the current PMSs of the shipping agency appear to lack a strong structure. However, the integration of digital technologies enhances efficiency, decision-making, and the efficacy of operational processes. These technologies also make the PMSs more adaptable by facilitating responses to reporting demands from stakeholders. The alignment between the agency's control tools and those of shipowners thus becomes apparent. Additionally, the agency has started to embrace quality certification systems, incorporating PMSs with KPIs to meet commercial requirements. This study addressed a gap in existing research, which has predominantly focused on digitalization in the shipping industry, while often overlooking the pivotal role of shipping agents in innovative SCM.

The main limitations of this study are to be found in its exploratory approach, especially given the challenge of gathering sufficient and well-organized information. Data are fragmented across employees and their software systems, which hinders a systematic analysis. Additionally, the study lacks the shipowner's perspective, which limits the scope of analysis. Future research could examine PMSs across multiple shipping agencies and delve into the role of digital technologies. Exploring the social and cultural factors influencing digital technologies in shipping intermediaries' PMSs, with a focus on sustainable performance, could also provide valuable insights. Adopting a stakeholder theory perspective is crucial for considering all parties involved in fostering effective and sustainable PMSs but incorporating institutional theory as a theoretical framework could further illuminate the impact of institutional pressures on digitalization within the shipping industry (Kuo et al., 2021; Lambrou et al., 2019). From the perspective of sustainability, future research should investigate the role of digital technologies as an enabling factor for the integration of sustainability into the PMSs of shipping agencies and the creation of sustainable business management. Indeed, over the last decade, the sustainability transition has increasingly been linked to digitalization. The European Commission (2021) described it the two as "twin transitions," which could lead to a "green digital transformation."

Acknowledgements
The authors would like to thank the Editor-in-Chief and Associate Editor for handling of the manuscript providing helpful comments and suggestions, which led to improving the article. This work is an outcome of the "Blue-Shipping&Cruise Lab" (BSCLab), Department of Law, University of Naples "Parthenope", Naples, Italy.

Funding
This work was supported by the University Parthenope, Naples, Italy, Research Financial Resources, "Ministero dell'Università e della Ricerca con

Decreto Ministeriale del 25.06.2021 n. 737 for research project entitled Transizione digitale per Modelli di Business Sostenibili e Resilienti nell'interfaccia nave-porto verso l'Agenda 2030 – P.I. Prof. Dr. Assunta Di Vaio."

References

Amaratunga D., Baldry D. (2002), Moving from performance measurement to performance management, *Facilities*, 20(5/6), pp. 217-223.

Attaran M. (2020), Digital technology enabòers and their implication for supply chain management, *Supply Chain Forum: An International Journal*, 21(3), pp. 158-172.

Balci G. (2021), Digitalization in container shipping: Do perception and satisfaction regarding digital products in a non-technology industry affect overall customer loyalty?, *Technological Forecasting and Social Change*, 172, 121016.

Bichou K., Bell M.G.H. (2007), Internationalisation and Consolodation of the Container Port Industry: Assessment of Channel Structure and Relationships, *Maritime Economics & Logistics*, 9, pp. 35-51.

Bititci U.S., Turner U., Begermann C. (2000), Dynamics of performance measurement systems, *International Journal of Operations & Production Management*, 20(6), pp. 692-704.

Bourne M., Neely A.D. (2003), Why some performance measurement initiatives fail: Lessons from the change management literature, *International Journal of Performance Management*, 5(2), pp. 246-269.

Büyüközkan G., Göçer F. (2018), Digital Supply Chain: Literature Review and a Proposed Framework for Future Research, *Computers in Industry*, 97, pp. 157-177.

Cagnazzo L., Taticchi P., Brun A. (2010), The role of performance measurement systems to support quality improvement initiatives at supply chain level, *International Journal of Productivity and Performance Management*, 59(2), pp. 163-185.

Calderon-Monge E., Ribeiro-Soriano D. (2024), The role of digitalization in business and management: a systematic literature review, *Review of Managerial Science*, 18(2), 449-491.

Chen D.Q., Preston D.S., Swink M. (2015), How the use of big data analytics affects value creation in supply chain management, *Journal of Management Information* Systems, 32(4), pp. 4-39.

Cinquini L., Mitchell F., Nørreklit H., Tenucci A. (2013), Methodologies for managing performance measurement, In *The Routledge Companion to Cost Management* (pp. 360-380), Routledge.

Clott C.B. (2000), Ocean Freight Intermediaries: An Analysis of Non-Vessel Operating Common Carriers (NVOCC's) and Maritime Reform, *Transportation Journal,* 40(2), pp. 17-26.

Corsi K., Mancini D., Piscitelli G. (2017), The integration of management control systems through digital platforms: A case study, In *Reshaping Accounting and Management Control Systems: New Opportunities from Business Information Systems* (pp. 131-151). Springer International Publishing.

Crawford M. (2017), *The role of technology in the UN SDGs*, Part two.

Crotty M.J. (1998), The foundations of social research: Meaning and perspective in the research process, *The foundations of social research*, pp. 1-256.

D'Onza G., Lamboglia R., Verona R. (2015), Do IT audits satisfy senior manager expectations? A qualitative study based on Italian banks, *Managerial Auditing Journal*, 30(4/5), pp. 413-434.
Davenport T.H. (1998), Putting the enterprise into the enterprise system, *Harvard business review*, 76(4).
Di Vaio A, Latif B, Gunarathne N, Gupta M, D'Adamo I (2023), Digitalization and artificial knowledge for accountability in SCM: a systematic literature review, *Journal of Enterprise Information Management*, 37(2), pp. 606-672.
Di Vaio A., Varriale L. (2020a), Blockchain technology in supply chain management for sustainable performance: evidence from the airport industry, *International Journal of Information Management*, 52, 102014.
Di Vaio A., Varriale L. (2020b), Digitalization in the sea-land supply chain: experiences from Italy in rethinking the port operations within inter-organizational relationships, *Production Planning & Control*, 31(2-3), pp. 220-232.
Duan Y, Edwards J.S., Dwivedi Y.K. (2019), Artificial intelligence for decision making in the era of Big Data–evolution, challenges and research agenda, *International Journal of Information Management*, 48, pp. 63-71.
Dubey R., Bryde D.J., Dwivedi Y.K., Graham G., Foropon C. (2022), Impact of artificial intelligence-driven big data analytics culture on agility and resilience in humanitarian supply chain: a practice-based view, *International Journal of Production Economics,* 250, 108618.
Eisenhardt K.M. (1989), Building theories from case study research, *The Academy of Management Review,* 14(4), pp. 532-550.
EU Commission (2021), EU Countries commit to leading the green digital transformation, viewed 19 April 2023, -- https://digital-strategy.ec.europa.eu/en/news/eu-countries-commit-leading-green-digital-transformation.
Ferreira A., Otley D. (2009), The design and use of performance management systems: An extended framework for analysis, *Management Accounting Research*, 20(4), pp. 263-282.
Ferreira P.S.A. (2024), Developing a roadmap for implementing digital transformation to improve the resilience of port operations, *International Journal of Scientific Management and Tourism*, 10(3), e888-e888.
Freeman R.E., Harrison J.S., Wicks A.C., Parmar B.L., De Colle S. (2010*), Stakeholder theory: The state of the art*, Cambridge University Press.
Freeman RE. (1984), *Strategic Management: A Stakeholder Approach*, Pitman Publishing, Boston, MA.
Furlong M. (2010), Clear at a distance, jumbled up close: Observation, immersion and reflection in the process that is creative research, In P. Liamputtong (Ed.), *Research methods in health: Foundations for evidence-based practice* (pp. 153-169). South Melbourne, Australia: Victoria Oxford University Press.
Ghobakhloo M., Iranmanesh M., Tseng M.L., Grybauskas A., Stefanini A., Amran A., (2023), Behind the definition of Industry 5.0: a systematic review of technologies, principles, components, and values, *Journal of Industrial and Production Engineering*, 40(6), pp. 432-447.
Gibbert M., Ruigrok W., Wicki B., (2008), What passes as a rigorous case study?, *Strategic Management Journal*, 29(13), pp. 1465-1474.
Glesne C., Peshkin A. (1992), *Becoming qualitative researchers*. White Plains, NY.
Goulielmos A., Mitroussi K., Gatzoli A. (2008), Marine accidents: quality vs safety and one step further, *International Journal of Ocean Systems Management*, 1(1), pp. 45-67.

Granlund M., Mouritsen J. (2003), Special section on management control and new information technologies, *European Accounting Review*, 12(1), pp. 77-83.
Gray J., Rumpe B. (2015), Models for digitalization, *Software & Systems Modeling,* 14, pp. 1319-1320.
Gunasekaran A., Patel C., McGaughey RE. (2004), A framework for supply chain performance measurement, *International Journal of Production Economics*, 87(3), pp. 333-347.
Gupta M., George J.F. (2016), Toward the development of a big data analytics capability, *Information and Management*, 53(8), pp. 1049-1064.
Heilig L., Lalla-Ruiz E., Voß S. (2017), Digital transformation in maritime ports: analysis and a game theoretic framework, *Netnomics: Economic research and electronic networking*, 18(2), pp. 227-254.
Holmström J., Holweg M., Lawson B., Pil F.K., Wagner S.M. (2019), The digitalization of operations and supply chain management: Theoretical and methodological implications, *Journal of Operations Management*, 65(8), pp. 728-734.
Karimi J., Walter Z. (2015), The role of dynamic capabilities in responding to digital disruption: a factor-based study of the newspaper industry, *Journal of Management Information Systems*, 32(1), pp. 39-81.
Klerkx L., Aarts N. (2013),The interaction of multiple champions in orchestrating innovation networks: conflicts and complemetarities, *Technovation*, 33(6-7), pp. 193-210.
Kuo H.M., Chen T.L., Yang C.S. (2022), The effects of institutional pressures on shipping digital transformation in Taiwan, *Maritime Business Review*, 7(2), pp. 175-191.
Lambrou M., Watanabe D., Iida J. (2019), Shipping digitalization management: conceptualization, typology and antecedents, *Journal of Shipping and Trade*, 4(1), 1-17.
Latour B. (2005), *Reassembling the Social*, Oxford University Press, Oxford.
Lichtenthaler U. (2013), The collaboration of innovation intermediaries and manufacturing firms in the markets for technology, *Journal of Product Innovation Management*, 30, pp. 142-158.
Mancini D. (2016), Accounting information systems in an open society: Emerging trends and issues, *Management Control*, 1, pp. 5-16.Doi: 10.3280/MACO2016-001001.
Mancini D., Lombardi R., Tavana M. (2021), Four research pathways for understanding the role of smart technologies in accounting, *Meditari Accountancy Research*, 29(5), pp. 1041-1062.
Mancini D., Piscitelli G. (2018), Performance measurement systems in business networks: a literature review, *International Journal of Business Performance Management*, 19(1), pp. 87-104.
Marchi L. (2011), L’evoluzione del controllo di gestione nella prospettiva informativa e gestionale esterna, *Management Control*, 3, pp. 5-16. Doi: 10.3280/MACO2011-003001.
Neely A.D. (1994), Performance measurement system design – third phase, *Performance Measurement System Design Workbook*, 1.
Neely A.D. (1999), The performance measurement revolution: Why now and what next?, *International Journal of Operations & Production Management*, 19(2), pp. 205-228.
Nikitakos N., Lambrou M.A. (2007), Digital shipping: the Greek experience, *Research in Transportation Economics*, 21, pp. 383-417.
Norreklit H., Cinquini L. (2023), Introduction to the Special Issue of Journal of Management and Governance:“Performance, management and governance in the digital age”, *Journal of Management and Governance*, 27, pp. 689-693.
Otheitis N., Kunc M. (2014), Performance measurement adoption and business performance. An exploratory study in the shipping industry, *Management Decision,* 53(1), pp. 139-159.

Otley D. (1999), Performance management: a framework for management control systems research, *Management Accounting Research*, 10, pp. 363-382.
Pargmann J., Riebenbauer E., Flick-Holtsch D., Berding F. (2023), Digitalisation in accounting: a systematic literature review of activities and implications for competences, *Empirical Research in Vocational Education and Training*, 15(1), 1.
Proctor C. (1997), *The Legal Role of the Bill of Lading, Sea Waybill and Multimodal Transport Document*, Interlegal, Pretoria.
Procurement Executives' Association (US), 1998. Guide to a Balanced Scorecard: Performance Management Methodology: Moving from Performance Measurement to Performance Management (Vol. 1). US Department of Commerce.
Quattrone P., Hopper T. (2005), A 'time-space odyssey': management control systems in two multinational organisations, *Accounting, organizations and society*, 30(7-8), pp. 735-764.
Quitzau J., Tontara N., Vöpel H., Jahn M., Otto A.H, Wolf A. (2018), Shipping in an era of digital transformation (No. 25e), *Strategy 2030-Capital and Life in the Next Generation.*
Rotondo F., Corsi K., Giovanelli L. (2019), The social side of sustainable business models: An explorative analysis of the low-cost airline industry, *Journal of Cleaner Production*, 225, pp. 806-819.
Sahlin J., Angelis J. (2019), Performance management systems: reviewing the rise of dynamics and digitalization, *Cogent Business & Management*, 6(1), 1642293.
Saleheen F., Habib M.M., Hanafi Z. (2018), Supply Chain Performance Measurement Model: A Literature Review, *International Journal of Supply Chain Management*, 7(3), pp. 70-78.
Scapens R.W. (2004), Doing Case Study Research, in: C. Humphrey & B. Lee (Eds.). *The real life guide to accounting research. A Behind-the-Scenes View of Using Qualitative Research Methods*, pp. 257–279, Oxford.
Siggelkow N. (2007), Persuasion with case studies, *Academy of Management Journal,* 50(1), pp. 20-24.
Stewart J., Hyysalo S. (2008), Intermediaries, users and social learning in technological innovation, *International Journal of Innovation Management*, 12(3), pp. 295-325.
Surucu-Balci E., Iris Ç., Balci G. (2024), Digital information in maritime supply chains with blockchain and cloud platforms: Supply chain capabilities, barriers, and research opportunities, *Technological Forecasting and Social Change*, 198, 122978.
Tijan E., Jović M., Aksentijević S., Pucihar A. (2021), Digital transformation in the maritime transport sector, *Technological Forecasting and Social Change*, 170, 120879.
Triantafylli A., Ballas A. (2010), Management control systems and performance: evidence from the Greek shipping industry, *Maritime Policy & Management*, 37(6), pp. 625-660.
Voss C., Tsikriktsis N., Frohlich M. (2002), Case research in operations management, *International Journal of Operations & Production Management*, 22(2), pp. 195-219.
Xu X., Lu C., Cui J. (2019), The Impact of Digitalization on the Performance Management of Intermediaries in the Shipping Industry. Proceedings of the 2nd International Conference on Industrial Economics System and Industrial Security Engineering, pp. 556-560.
Yin R.K. (1981), The case study crisis: some answers, *Administrative Science Quarterly*, 26(1), pp. 58-65.
Yin R.K. (1994), Discovering the future of the case study method in evaluation reasearch, *Evaluation Practice*, 15(3), pp. 283-290.
Yin R.K. (2006), Case study methods, in Green, J.L., Camilli, G. and Elmore, P.B. (Eds), *Complementary Methods in Education Research*, Lawrence Erlbaum Associates, Hillsdale, NJ, pp. 111-122.

Zhai H., Yang M., Chan K.C. (2022), Does digital transformation enhance a firm's performance? Evidence from China, *Technology in Society*, 68, 101841.

Ambidextrous Intellectual Capital in the scientific research: An empirical analysis on university spin-offs

Fabio Nappo[*], *Federico Schimperna*[*], *Maria Schimperna*[**]

Received: 23 November 2023
Accepted:15 September 2024

Abstract
This work aims at analyzing the level of awareness on the topic of planning and control by people with an apical role in research spin-offs, suggesting a framework to increase the survivability of spin-offs.
The universities take a strategic role as "knowledge incubators" to ensure competitive advantage through the use of their knowledge stock. In this scenario, research spin-offs contribute to the valorisation of intellectual capital in universities. However, Consorzio Netval's data highlighted that the percentage of spin-offs liquidated from 2000 to 2019 is approximately 72%.
The analysis of the literature shows many issues that spin-offs face; however, there is little research on another possible critical issue that this study aims to fill: the difficulties during the phases of research spin-offs' planning and control, especially in adequately balancing their short and long-term goals.
Thus, we submitted a questionnaire to a panel of experts to investigate their view of the management, planning and control systems. Results show a lack of attention to the application of these systems in spin-offs, while acknowledging awareness of their importance.
On the basis of these findings, we propose a framework to increase the survivability of research spin-offs, overcoming their main issues. Our framework relies on the application of ambidextrous intellectual capital to spin-offs, considered a valuable solution, given that it combines the attention to the future, typical of spin-offs and start-ups, with the attention to the present, necessary to go beyond the pre-seed phase.

Keywords: spin-off, intellectual capital, ambidexterity, innovation, planning and control; university

[*] University of Cassino and Southern Lazio, Department of Economics and Law., Country, Italy. Corresponding author: federico.schimperna@unicas.it.
[**] University of Rome "La Sapienza", Department Law and Economics of Productive Activities, Italy.

Management Control (ISSN 2239-0391, ISSNe 2239-4397), 2024, 2 – Special issue
Doi: 10.3280/MACO2024-002-S1010

1. Introduction

The universities take a strategic role as "knowledge incubators" to ensure competitive advantage through the use of their knowledge stock (Stewart and Ruckdeschel, 1998) and research spin-offs contribute to the valorisation of the intellectual capital (IC) in universities.

IC is defined by Stewart (1997) as *"intellectual material, knowledge, experience, intellectual property, information…that can be put to use to create wealth"*. It is composed of human capital, relational capital and structural capital (Stewart, 1997). Human capital incorporates individual potential and capabilities to provide problem-solving and produces knowledge that generates innovation, relational capital is the set of relationships established between the company and its stakeholders, while structural capital represents all the codified and non-codified knowledge owned by the company (Trequattrini, 2008).

IC can be considered a strategic asset in light of its contribution to i) innovation as the main source of competitive advantage; ii) the knowledge and knowledge-based economy; iii) the network society; and iv) the information technology and information society (Petty and Guthrie, 2000; Lombardi and Schimperna; 2021). Additionally, in the current context of growing uncertainty and complexity, the ambidextrous IC, an evolution of IC, is becoming increasingly relevant to every type of organization (Mubarik *et al*., 2019). It allows the combination of the characteristics of companies focused on leveraging existing capabilities to generate profits and those focused on exploring new growth opportunities (O'Reilly and Tushman, 2004). Thus, it combines exploration and exploitation (Duncan, 1976). This generally allows to perform better and be more vigorous than non-ambidextrous organizations (Tushman and O'Reilly, 1996; Benner and Tushman, 2003). Particularly, ambidexterity enhances organisations' sustainable competitive advantage (Turner *et al*., 2015) and improves organisational performance (Junni *et al*., 2013; Turner *et al*., 2015) through increased efficiency in the execution of normal activities (exploitation), and the simultaneous ability to adapt to change by exploring new opportunities (exploration) (Presenza and Petruzzelli, 2019).

In this perspective, entrepreneurial universities are intermediaries that manage and enhance local IC, enable the growth of learning regions (Trequattrini *et al.,* 2018 b) and, through the creation of spin-offs, achieve economic and social benefits (Etzkowitz, 2003; Guerrero and Urbano, 2012; Shah and Pahnke, 2014; Mok, 2015).

However, analyzing Consorzio Netval's data, it is observable that the percentage of spin-offs liquidated from 2000 to 2019 is very significant: approximately 72% (excluding spin-offs with not available information). Particularly, spin-offs are more future-oriented than present-oriented, leading to an extremely low survival with high failure and closure rates, mainly in the first years. According to Wennberg et al. (2011), research spin-offs have lower survival and slower sales growth even than corporate spin-offs. However, some planning and control tools could allow these two aspects – future and present orientation – to coexist.

Planning and control are essential to define and implement the strategy of companies and verify compliance with objectives and the criteria of efficacy and efficiency (Marasca *et al.,* 2013; Lombardi *et al.,* 2021a). Research spin-offs are knowledge-intensive organizations (KIOs) (Habersam and Piber, 2003; Elia *et al.,* 2017) and their success is highly dependent on the continuous and effective management of their IC (Hormiga *et al.,* 2011). In this scenario, planning and control should be based on knowledge planning and implementation (Muchmore *et al.,* 2018). These tools should support both knowledge creation and sharing, with elements of adaptive and generative systems (Herremans and Isaac, 2005).

For these reasons, this work aims to analyze the level of awareness on the topic of planning and control by people with an apical role in research spin-offs, suggesting some solutions to overcome the main issues that these organizations are facing, especially in the pre-seed phase.

In light of these considerations, we carried out a qualitative analysis (Hair Jr. *et al*., 2003) according to an ambidextrous perspective and based on a quadruple approach. In the first step of the analysis, we used Scopus to find relevant documents related to planning and management control of spin-offs and we classified them according to their contribution to the three components of IC. In the second step, we developed a set of four descriptors per component, while, in the third step, we created a questionnaire with a Likert scale submitted to a panel of experts with senior roles in research spin-offs to understand their level of awareness, in terms of knowledge of the relevance of these tools, and application on the topic of planning and control.

Lastly, in the fourth step, we analyzed the findings of the questionnaire, and we carried out a framework composed of relevant indicators to be considered to overcome the main issues spin-offs are facing.

The remainder of the article is structured as follows: Section 2 provides the literature review, Section 3 describes the research method, Section 4 highlights the main findings and the related discussion, and Section 5 carries out conclusions.

2. Literature review

2.1 Research spin-offs and ambidextrous IC

The universities can be considered "knowledge incubators", essential to ensure competitive advantage using their knowledge stock (Stewart and Ruckdeschel, 1998; Elia *et al*., 2017; Trequattrini *et al*., 2018a). In this perspective, universities play also a fundamental institutional role in national innovation systems (Sanchez and Elena, 2006; Todericiu and Serban, 2015), allowing the achievement of the following goals: knowledge production through scientific research, diffusion of knowledge asset through teaching activity (Leitner and Warden, 2004; Sanchez *et al.,* 2009; Veltri *et al*., 2014; Secundo *et al.,* 2016; Schimperna *et al*., 2021a), research results' enhancement, and achievement of economic and social benefits thanks to the creation of spin-offs (Etzkowitz, 2003; Guerrero and Urbano, 2012; Shah and Pahnke, 2014; Mok, 2015).

Additionally, according to Trequattrini *et al.* (2018 b), entrepreneurial universities can be considered intermediaries that manage and enhance local IC and allow the learning region growth. Indeed, links between professors and company representatives have already emerged in the last century, generally in the form of contracts, conventions, donations, consultancies, and other types of commercialization of scientists' intellectual products. Today, the current phase of academic entrepreneurship development is characterized by the institutionalization of innovative tools, that allow universities and firms to have a strong leadership role in their respective contexts (Trequattrini *et al*., 2008), and by the development of new technologies (Schimperna *et al*., 2021b; Lombardi *et al*., 2021a; Russo *et al*., 2022; Nappo *et al*., 2023).

In this scenario, research spin-offs are assuming an increasingly important role (Lazzeri and Piccaluga, 2012). Research spin-offs are knowledge-intensive organisations (Habersam and Piber, 2003; Elia et al., 2017), involved in the knowledge creation and knowledge transfer of universities (Rothaermel et al., 2007). In this perspective, their success in the market is highly dependent on the continuous and effective management of their IC (Hormiga et al. 2011).

IC is defined as *"intellectual material, knowledge, experience, intellectual property, information…that can be put to use to create wealth"* (Stewart, 1997), and can lead to competitive advantage (Stewart and Ruckdeschel, 1998; Kamukana, 2013; Yaasen *et al*., 2016). It is composed of human capital, relational capital and structural capital (Becker, 1964; Lev and Schwartz, 1971; Nonaka, 1994; Stewart, 1997; Lombardi *et al*., 2021b). Human capital incorporates individual potential and capabilities to provide problem-solving and produces knowledge that generates innovation (Pennings *et al.,* 1998). In universities, it refers to the intangible value of individual competencies, as the expertise, knowledge and experiences of researchers, professors, technical and administrative staff, and students' competencies (Leitner *et al.,* 2014; Secundo *et al.,* 2016; Pradana *et al*., 2020).

Relational capital is the set of relationships established between the company and its stakeholders (Prahalad and Ramaswamy, 2000; Dorrego *et al.*, 2013; Hayaeian *et al*., 2021; Weqar *et al*., 2021); particularly, in universities, it can be considered as the whole of intangible resources capable of generating value linked to the university's internal and external relations. It includes relations with public and private partners, position and image in (social) networks, the brand, involvement of industry in training activities, collaborations with international research centres, networking with professors, international exchange of students, international recognition of the universities, and attractiveness (Leitner *et al.,* 2014; Secundo *et al.,* 2016).

Structural capital represents all the codified and non-codified knowledge owned by the company (Bontis, 1998; Trequattrini, 2008). Its main components in universities are the databases, the research projects, the research infrastructure, the research and education processes and routines, the university culture, image and reputation (Leitner *et al.,* 2014; Secundo *et al.,* 2016).

Today, the ambidextrous IC, an evolution of IC, is becoming increasingly relevant in companies. It links exploration and exploitation (Duncan, 1976) and generally allows to perform better and be more vigorous in business than non-ambidextrous organizations (Tushman and O'Reilly, 1996; Benner and Tushman, 2003). There is agreement that an organization faces a balance between properly exploiting existing skills and exploring new opportunities by aligning its functions (Junni *et al.,* 2013; Baškarada *et al.,* 2016; Alänge and Steiber, 2018; Mubarik *et al.,* 2019).

IC enhances business value through knowledge resources (Rehman et al., 2021; Ahamad *et al*., 2022; Karasneh, 2022) and allows to promote business competitiveness by creating ambidextrous innovation (Mahmood and Mubarik, 2020; Mubarik *et al*., 2019). Ambidextrous innovation is the simultaneous implementation by a company of both exploratory and exploitative innovation (Lin and Chang, 2015). The first one is the disruption of existing knowledge and technologies, the discovery of new designs, methods and processes, the creation of new products or services, and the development of new markets. The second improves and updates designs, methods and processes based on existing knowledge and technologies to further reduce costs and improve product or service quality (Lin and Chen, 2015). In this perspective, knowledge sharing influences ambidextrous innovation (Zhang *et al.*, 2022).

Thus, IC is the basis of ambidexterity (Simsek, 2009; Dezi *et al.*, 2019). Through specific combinations of IC components, it is possible to support the acquisition, transfer and integration of the knowledge required for ambidexterity (Kang and Snell, 2009). In particular, by improving IC (e.g. business processes, human capital and relationships), ambidexterity can be achieved (Bontis, 1998; Mubarik *et al.*, 2019). It is through human capital, structural capital and relational capital that an organization achieves a balance between exploitation and exploration of opportunities (Subramaniam and Youndt, 2005; Kang and Snell, 2009; Swart and Kinnie, 2010).

In this scenario, the ambidextrous IC allows to enhance organisations' sustainable competitive advantage (Turner *et al.*, 2015) and improve organisational performance (Junni *et al.*, 2013; Turner *et al.*, 2015) through an increased efficiency in the execution of normal activities (exploitation), and the concurrent ability of exploring new opportunities (exploration) to adapt to change (Presenza and Petruzzelli, 2019). This leads ambidextrous organizations to have the ability both to compete in the current marketplace through efficiency, cost, and dynamic innovation and to develop new products and services for new and emerging markets through speed, flexibility, and experimentation (Tushman and O'Reilly, 1996).

Usually, these two profiles have different characteristics (Liang *et al.*, 2024). Specifically, in an exploitative business, profit is the strategic aim, the critical tasks are operations, efficiency, and incremental innovation, the skills required are mostly operational, the structure is formal and mechanistic, and the controls and rewards concern margins and productiveness. Moreover, in such an environment there is authoritative and top-down leadership, and it is imbued with a culture of efficiency, low risk, quality, and customer-oriented (O'Reilly and Tushman, 2004; Kearns, 2007). Conversely, in an exploratory business, the strategic intent is represented by innovation and growth, adaptability, new product research, and breakthrough innovation are the main critical tasks, there is the need for entrepreneurial skills, the structure is adaptive, and the controls and rewards are related to milestones and growth (Raisch and Tushman, 2016; Jia, 2018). In addition, the leadership is visionary and involved, and the culture is geared toward flexibility, experimentation, speed, and risk-taking (O'Reilly and Tushman, 2004).

Thus, by achieving organizational ambidexterity through the tool of ambidextrous IC, it is possible to manage the two opposing perspectives together, overcoming the limitations of either view (Pasamar *et al.*, 2015; Chen, 2017; Armenia *et al.*, 2024). In the literature, limitations of an unambidextrous enterprise, based only on exploration or only on exploitation, emerge (Joensuu-Salo and Viljamaa, 2024). In particular, exploration alone can lead to failure, neglect of improvement and adaptation of existing routines, and failure to benefit from economies of scale (March, 1991; Levinthal and March, 1993; Güttel and Konlechner, 2009).

Instead, exploitation alone can lead to obsolescence and a stable but suboptimal equilibrium (March, 1991; Levinthal and March, 1993). From this perspective, it becomes critical for companies to have capabilities, strategies, and structures that allow for ambidextrous short- and long-term balance as a competitive capability (Birkinshaw and Gupta, 2013). Thus, ambidextrous IC is a critical factor for short- and long-term success, bringing superior performance (O'Reilly III and Tushman, 2013; Zhang *et al*., 2021) and sustainable competitive advantage (Huang *et al*., 2021; Park *et al*., 2019).

2.2. The main features of research spin-offs

Research spin-offs originate by budding from a university or Public Research Organisation (PRO), in which a group of researchers forms an entrepreneurial core to exploit skills and research results gained within the home institution (Conti *et al.,* 2011). In research spin-offs, knowledge is the main resource, together with financial funding and instrumental assets (Di Berardino, 2013). According to Conti *et al*., 2011, there is not a unique definition of research spin-off. However, it is possible to identify the following characterizing elements:

- founding membership: it must always include at least one person with relevant experience in public research;
- intellectual property (IP) rights: partners can start the business activity to enhance their knowledge, regardless of the presence of IP rights or a patent (or several patents) on which the business idea is based;
- business sector: spin-off companies are often started in fields where barriers to entry are quite low;
- motivations of the founding partners: among them, there are the involvement of the young people they work with, the enhancement of their skills by performing, providing job opportunities for PhDs, establishing a "virtuous circle" that attracts promising young researchers to their laboratories (Helm and Mauroner, 2007; Lam, 2011). These motivations generally lead to little appetite for growth and risk. The opposite situation occurs when "unstructured" young people, perhaps together with some professors, actually aspire to set up an enterprise to make it their main professional activity;

- industrial partner: the participation in the share capital of other organizations greatly affects the business model of the spin-off;
- the nature of the technology that influences the definition of the spin-off business model: from this perspective, each spin-off has a certain degree of innovation linked to the technologies employed. Therefore, it is necessary to assess the temporal distance between the moment of invention and the moment when the market will be able to absorb the proposed innovation to a significant extent;
- the presence of a financial partner: it is relevant, given that a key element for the success of all start-ups is access to finance (Giakoumelou *et al.,* 2023). In addition, lenders and investors assess also management control systems (Davila *et al*., 2015).

Research spin-offs contribute to the valorisation of the IC in universities. In universities, intangible assets and IC represent the largest percentage of assets (Sánchez *et al*., 2009; Secundo *et al*., 2010; Ramírez Corcóles *et al*., 2011) and, through research spin-offs, these assets are valorized. In this scenario, technology transfer and investment in innovation take place and research spin-offs become the operational arm of the university in the local economy, providing economic benefits and creating IC.

The main outputs of IC creation are: i) the development of hi-tech skills for employees (perspective of human capital); ii) the creation and improvement of networks (perspective of relational capital); and, iii) the development of patents and research projects (perspective of structural capital). In turn, these benefits stimulate a scientific atmosphere that, in a virtuous circle, leads to new innovative ideas, research and businesses (Mariani *et al.,* 2018).

In this scenario, planning and control are pivotal in KIOs. Particularly, they are essential for defining and implementing the strategy and verifying compliance with objectives and criteria for effectiveness and efficiency (Marasca *et al*., 2013; Lombardi *et al*., 2021a). In the context of KIOs, planning and control should be based on knowledge planning and implementation (Muchmore *et al*., 2018). These tools, indeed, should support both the creation and sharing of knowledge, with elements of adaptive and generative systems (Herremans and Isaac, 2005). Particularly, an adaptive system is characterized by learning through a self-organizing process (Gell-Mann, 1994; Kauffman, 1993). Instead, a generative system is based on learning associated with radical innovations that would improve firm performance (Kang *et al*., 2007).

However, the analysis of the literature pointed out difficulties during the phases of research spin-offs' planning and control and in adequately balancing spin-offs' short and long-term goals; particularly, Iacobucci et *al.* (2010) show that two managerial issues impact on transforming the initial idea into a sustainable business in the market: (i) the imbalance of the founding partner team toward purely technological skills instead of managerial and organizational skills; and (ii) the lack of clarity in the definition of entrepreneurial orientation.

This could contribute to Consorzio Netval's findings that highlighted a very significant percentage of spin-offs liquidated from 2000 to 2019, approximately 72%. The most common issues they face are also attributable to i) intrinsic difficulties in the development of new technologies and competencies (Oakey *et al.,* 1996); ii) organizational and managerial factors (Stoneman, 1995; Hall and Rosenberg, 2010); and iii) factors linked to the context in which they are located (Breznitz *et al*., 2008; Baldini, 2010; Rasmussen *et al.,* 2011); iv) access to finance (Giakoumelou *et al.,* 2023).

Additionally, the literature provides only few articles on the topics of planning and management control of spin-offs and the need for a well-defined framework to address the main issues spin-offs have to face emerged.

In light of the previous considerations, we selected the following two research questions:

RQ1: What is the level of awareness on the topic of planning tools and practices and control by people with an apical role in research spin-offs?

RQ2: What are the main indicators spin-offs should consider to adequately address the stages of planning and management control, in the perspective of the ambidextrous IC?

3. Research method

Our research relies on a qualitative method (Bell *et al*., 2022), considered the best solution to answer our research questions. Particularly, *"A qualitative research approach is the most appropriate and indeed the only way to achieve some research objectives. Situations in which qualitative research is likely to be the preferred method include 1) which little known about a research problem or opportunity, 2) where previous research only partially or incompletely explains the research question, 3) when current knowledge involves subconscious, psychological, or cultural material that is not accessible using survey and experiments, and 4) if the primary purpose of the research is to propose new ideas and hypotheses that can eventually be tested with quantitative research"* (Hair Jr. *et al*., 2003, p. 276). In light of this, we applied a qualitative method based on a quadruple approach, developed in the following stages: i) identification; ii) selection; iii) exploratory analysis; and iv) development of the framework. The framework by Mahmood *et al.*

(2021) provided the basis for the development of our methodology and the questionnaire. This framework was developed for start-ups; thus, we modified and removed some points to adapt it to the characteristics of research spin-offs and IC in spin-offs.

In the first step of the research ("identification"), we analyzed the literature to identify the dimensions and sub-dimensions of IC. Particularly, we used Scopus as the database to find relevant documents to understand the main themes related to planning and management control of spin-offs. We did a lot of research, always without any time limit, in order to have the widest possible view of this perspective. Specifically, by searching for "management control AND start-up*", limiting the search field to "Business, Management and Accounting" and selecting only English research articles, we found 199 documents. Applying the same filters, but searching for "planning AND start-up*", we found 510 documents. Narrowing the research field to spin-offs, we retrieved only 60 articles related to "planning and spin-off*" and 23 related to "management control and spin-off*". However, no one addresses the issues of closure of spin-offs and the absence of management control systems. Then, we reclassified these articles according to their contribution to the IC components as follows: 24 were associated with human capital, 31 with relational capital, and 28 with structural capital. This classification is the basis for the next step, as it provides us with the key elements of the three components of IC according to the literature.

Table 1 - Descriptors per component

IC component	Descriptor
Human capital	i) experiences and competencies of the decision-making body;
	ii) employees' skills and abilities;
	iii) gender diversity;
	iv) creativity.
Structural capital	i) intellectual property rights;
	ii) databases;
	iii) procedures;
	iv) research and development.
Relational capital	i) stakeholder relations;
	ii) strategic alliance with incubators or companies;
	iii) collaboration with universities;
	iv) management reputation.

Source: our elaboration

Starting from the analysis of the articles classified according to the IC components, we developed a set of four descriptors per component (second step – "selection"), as described in Table 1. These descriptors represent the main characteristics of each IC component, as emerged from the literature classification, and are the basis for understanding on which aspects an ambidextrous intellectual capital-based planning and control tool should be based.

In the third step of the research ("explorative analysis"), each descriptor was articulated through 2 or 4 questions to develop a questionnaire with a 5-point Likert scale (Likert, 1932) (See Appendix A for the questions – www.sidrea.it/ambidextrous-intellectual-capital). Additionally, the questionnaire was developed from the perspective of ambidextrous IC, taking it a step further than the literature. Particularly, this means that the assertions were constructed considering both exploitation and exploration. The questionnaire was submitted to a panel of experts with senior roles in research spin-offs to understand the level of awareness and application on the topic of planning and control, with both the perspectives of exploration and exploitation, by people with an apical role in research spin-offs.

After recognition of the university's spin-offs on the website and Netval and checking this with the designated office of the university, to make sure no spin-offs were excluded, the Aida database was used to find information on the people in senior positions of these spin-offs. Thus, we submitted our questionnaire to 52 people, representing 91% of people involved in research spin-offs of the University of Cassino and Southern Lazio. In this university there are 10 spin-offs operating in different sectors: electronic processing of accounting data (1 spin-off); computer programming activities (1 spin-off); research and experimental development on social science and humanities (2 spin-offs); integrated engineering planning services (1 spin-off); manufacture of batteries and accumulators (1 spin-off); manufacture of electrical and non-electrical domestic equipment (1 spin-off); manufacture of electricity distribution and control apparatus (1 spin-off); engineering office services (1 spin-off); other entrepreneurial consulting services and administration-management and company planning consultancy (1 spin-off). Additionally, 6 spin-offs are small-sized, 3 are medium-sized and 1 large-sized.

The people involved in these spin-offs have different backgrounds: there are graduates in economics, business, law, humanities, and engineering subjects. Focusing on the positions held, some are full professors, some associates, some researchers, some technical-administrative staff, and others are external experts from the university, while age ranges from approximately 30 years to approximately 65 years. In this way, the results were not affected by variables related to background, role, and age. Their specific characteristics are described in the following Table 2.

Table 2 - Main characteristics of the panel of experts

Aspect	Characteristic	Number of people
Role in spin-off	Chairman of the board	5
	Vice Chairman of the Board	3
	Member of the Board	16
	Sole Administrator	4
	Shareholder	23
	CEO	1
Age	≤30	3
	31-45	19
	46-55	14
	56-70	15
	≥71	1
Gender	Man	35
	Women	17

Source: our elaboration based on the Aida database

Subsequently, the findings of the questionnaire were analysed and allowed us to answer our research questions, understanding: i) the level of awareness on the topic of planning and control by people that have an apical role in research spin-offs; and ii) the main indicators spin-offs should consider to adequately address the stages of planning and management control (see Section 4). Particularly, the answers were analyzed to understand whether planning and control indicators developed from an ambidextrous perspective can be effective tools, according to the experts. Their answers showed whether i) they find planning and control developed from an ambidextrous perspective useful; and ii) they agree with ambidextrous IC planning and control statements. The framework was developed considering the descriptors and indicators derived from questions that received 50% + 1 of the answers with 5/5 ("strongly agree") and 4/5 ("agree"). This resulted in a framework based on ambidextrously IC descriptors and indicators that enable the planning and control phase shared by experts. Our framework broadens the framework by Mahmood *et al.* (2021) by identifying indicators that allow measurement of ambidextrous IC and improve planning and control in a KIO.

4. Findings and discussion

The results showed a broad participation in the questionnaire. Particularly, the response rate was 82.69%. After the analysis of the answers, we considered suitable for the framework only those questions that received a score of 5/5 and 4/5 in 50% + 1 of the cases. Conversely, the item was excluded, as it did not represent a significant aspect to be considered according to the expert panel. When analyzing the answers, a positive value was given to the item with a score of 5/5 or 4/5. In the case of scores of 3/5, 2/5, and 1/5, a negative value was given to the answer. More in detail, 24 answers (80%) had scores of 4/5 or 5/5 and 6 answers (20%) had scores of 3/5, 2/5 or 1/5.

The first step of the analysis of the questionnaire was based on the human capital, and we found that people with an apical role in research spin-offs consider experiences and competencies of the decision-making body essential for both exploitation (in the present, in which efficiency, costs and dynamic innovation are crucial) and exploration (in the future, in which speed, flexibility and experimentation are crucial).

The answers pointed out the relevance of employees' skills and abilities for both the exploitation of the current opportunities and the exploration of future ones. Focusing on the role of gender diversity, there is not a unique trend of answers: for someone, it is very relevant, for others, there is not a significant impact. Specifically, for 60% (percentage consisting of those who gave a score of 5/5 or 4/5) of respondents, having gender diversity (for both senior management and/or employees) plays an important role in exploring and exploiting at the same time. For the others, gender diversity is not an impactful issue for achieving organizational ambidexterity. Additionally, for 70% (percentage consisting of those who gave a score of 3/5, 2/5, and 1/5), gender diversity is not related to cost reduction.

Focusing on the questions related to the "creativity" descriptor, 72% stated that the creativity of top management is important for the commercialization of innovation, while 52% stated that the creativity of top management is not relevant.

Moving to the structural capital, 78% highlighted that intellectual property rights and research and development allow exploitation through cost reduction, and 81% stated that intellectual property rights and research and development allow exploration through the commercialization of innovative products and services. Instead, intellectual property rights and research and development appear not relevant for adopting innovative work processes (73%). Focusing on databases and procedures, we did not find a unique trend: database and procedures (68% and 65% respectively) do not allow a reduction of operative costs, even if they could impact on the possibilities of exploitation and exploration, through a comprehensive view of the state-of-the-art of technologies on which the business idea is based, enhancing the firm performance.

With regard to relational capital, 70% highlighted that stakeholder relations and collaboration with universities have a relevant role in exploitation and exploration. Additionally, 80% stated that strategic alliances with incubators or companies mainly support innovative processes. Lastly, management reputation enhances the commercialization of products and services that are completely new to the organization (75% of respondents), exploiting existing opportunities (72% of respondents) and adopting innovative work processes (86% of respondents). Instead, it would appear irrelevant to reduce operating costs (59% of respondents).

Thus, these results are aligned with previous literature, showing a high awareness of the importance of ambidextrous managerial control systems in spin-offs. However, the literature highlights a lack of attention to their application (Feldman and Klofsten, 2000), leading to the high percentage of spin-offs liquidated as suggested by Consorzio Netval's data. To overcome these issues, in our view, the application of the framework of ambidextrous IC (Mahmood *et al.*, 2021) to spin-offs can be a valuable solution, given that it combines the attention to the future, typical of spin-offs and start-ups, with the attention to the present, necessary to go beyond the pre-seed phase. Indeed, this organizational ambidexterity is an organizational capability that allows an organization to explore new opportunities through innovation, while effectively exploiting the current opportunities (Stewart, 1998; Raisch and Birkinshaw, 2008; Jansen *et al.*, 2012; O'Reilly III and Tushman, 2015; Pasamar *et al.*, 2015; Jurksiene and Pundziene, 2016). Thus, moving from the IC to the ambidextrous IC, exploration and exploitation activities can be effectively balanced (Harris, 2000; Asiaei *et al.*, 2018; Mubarik *et al.*, 2019; Mahmood and Mubarik, 2020). In light of the literature review and the results of the questionnaire, we think that the following framework of planning and control in the research spin-offs based on ambidextrous IC can increase the survivability of spin-offs. Our framework, divided according to the IC component, is composed of descriptors (developed from the literature review) and proposed indicators (developed from the answers received to the questionnaire), that allow the effective implementation of ambidextrous IC in research spin-offs and planning their improvement.

Human capital descriptors and related indicators developed are the following (Tab. 3):

Table 3 - Human capital framework

IC component	Descriptors	Proposed indicators
Human capital	i) experiences and competencies of the decision-making body; ii) employees' skills and abilities; iii) gender diversity; iv) creativity.	i) average age of management;
		ii) the number of managerial experiences;
		iii) the number of training courses activated for employees;
		iv) diversity in corporate management;
		v) diversity among employees;
		vi) the number of innovative projects financed.

Source: our elaboration

Focusing on relational capital, we developed the following descriptors and indicators, as shown in Table 4:

Table 4 - Relational capital framework

IC component	Descriptors	Proposed indicators
Relational capital	i) stakeholder relations; ii) strategic alliance with incubators or companies; iii) collaboration with universities; iv) management reputation.	i) the number of contracts, facilitations and agreements concluded with public and private entities;
		ii) the number of projects carried out with the support of incubators or other entities (venture capital);
		iv) existence of contracts and agreements with universities or research centres;
		v) the number of publications or research activities carried out on the subject of the spin-off.

Source: our elaboration

Moving to structural capital descriptors and indicators, we defined the following (Tab. 5):

Table 5 - Structural capital framework

IC component	Descriptors	Proposed indicators
Structural capital	i) intellectual property rights; ii) databases; iii) procedures; iv) research and development.	i) revenues from the strategic use of intellectual property assets.
		ii) the number of databases purchased.
		iii) the number of certifications and/or organisational models.
		iv) amount of funding for research and development

Source: our elaboration

The success of KIOs, including research spin-offs, is highly dependent on the continuous and effective management of their IC (Hormiga et al. 2011). Thus, the suggested dashboard, derived from the set of these indicators, can help to understand which elements of IC to consider and develop to carry out better planning and control, both in the exploitation and exploration perspective, thereby also enriching the existing literature on the topic.

In existing spin-offs, this framework should be used initially to monitor the level of ambidextrous IC achieved. Then, it could be used to plan how to improve the level of ambidextrous IC by setting new objectives for the next period. In new spin-offs, it should be used from the outset to plan in order to have an optimal combination of ambidextrous IC and subsequently to monitor and set new objectives. In a KIO, indeed, only planning and controlling the combination of IC to achieve ambidexterity makes it possible to survive the first few years. Thus, by giving attention to the presence of ambidextrous IC in all business processes, it is possible to improve business performance and, consequently, decrease the failure and closure rate (Turner *et al*., 2015; Presenza and Pretuzelli, 2019).

This planning and control tool could allow higher efficiency and survival rate since it combines short- and long-term goals. These indicators have been developed considering the characteristics of spin-offs and IC in research spin-offs and are applicable to all research spin-offs without specific conditions. Additionally, with appropriate adjustments, it is possible to generalize them to KIOs.

5. Conclusions

Entrepreneurial universities as intermediaries that manage and enhance local IC allow the learning region growth (Trequattrini *et al.* 2018b). Links between professors and company representatives have already emerged in the last century, in many forms of commercialization of scientists' intellectual products, such as contracts, conventions, and donations. Today, the current phase of academic entrepreneurship development is characterized by the institutionalization of innovative tools that allow universities and firms to have a strong leadership role in their respective contexts (Trequattrini *et al.*, 2008). In this scenario, research spin-offs are KIOs that contribute to the valorisation of IC in universities. Analyzing data about research spin-offs available on Netval, it is possible to note the high closure rate, approximately 72%, from 2000 to 2019, and the literature review shows a literature gap about this topic. Thus, our research aimed to answer the following two research questions: i) *What is the level of awareness on the topic of planning tools and practices and control by people with an apical role in research spin-offs?* and ii) *What are the main indicators spin-offs should consider to adequately address the stages of planning and management control, in the perspective of the ambidextrous IC?*

Focusing on RQ1, results show a high level of awareness of the importance of ambidexterity planning and control in spin-offs but a low application of planning and control methodologies. Moving to RQ2, on the basis of the answers received, we suggest a framework of planning and control composed of descriptors and indicators of ambidextrous IC to manage short and medium-long-term goals simultaneously.

Thus, these findings and the suggested framework provide insight into how the application of ambidextrous IC in planning and control can increase the survivability of spin-offs, thanks to the attention to both the future, typical of spin-offs and start-ups, and the present, necessary to go beyond the pre-seed phase. Skills to succeed in the present are different from those in the medium-long-term and being oriented to both the present and the future allows one to be competitive in the current marketplace, where efficiency, cost, and dynamic innovation are key assets, and to develop new products and services for new and emerging markets, where speed, flexibility, and experimentation are key elements (Tushman and O'Reilly, 1996).

This study confirms the crucial role of planning and control knowledge implementation in KIOs (Muchmore *et al*., 2018). Furthermore, we corroborated previous research (Tushman and O'Reilly, 1996; Benner and Tushman, 2003; Mahmood *et al*., 2021) on how in contexts where it is crucial to balance short-term and long-term objectives, and where intangible capital is the key corporate resource, being able to develop ambidextrous IC (and thus planning and control) could be useful to increase the survival rate of spin-offs and combine short-term and long-term objectives. Additionally, our framework broadens the one by Mahmood *et al.* (2021), because, on one side, it is adapted to particular start-ups with a high closure rate, i.e. research spin-offs, and, on the other, it also provides indicators on the basis of which to plan and control IC in KIOs.

This research has several theoretical and practical implications. Particularly, in the theoretical perspective, it contributes to the literature on planning and control (Marasca *et al*., 2013; Muchmore *et al.,* 2018; *Lombardi et al.,* 2021a), on issues affecting spin-offs (Stoneman, 1995; Oakey *et al.,* 1996; Breznitz *et al*., 2008; Hall and Rosenberg 2010; Baldini, 2010; Iacobucci *et al*., 2010; Rasmussen *et al.,* 2011) and on the ambidextrous organization (Park et al., 2019; Huang *et al*., 2021; Mahmood *et al*., 2021; Zhang *et al*., 2021). Additionally, these results can be useful for academic researchers and practitioners. Specifically, this research provides them with a tool that could be useful for improving the survival rate of their research spin-offs. Furthermore, it provides a planning and control tool that can also be applied in other contexts characterised by the need to balance exploitation and exploration.

However, this research has a main limit due to the restricted sample that answered the questionnaire, limiting the possibility of generalising the results and investigating in detail any geographical differences. Overcoming this limitation will be the starting point for future research.

References

Ahamad S., Al-Jaifi H. A. A., & Ehigiamusoe K. U. (2022), Impact of intellectual capital on microfinance institutions' efficiency: The moderating role of external governance, *Journal of the Knowledge Economy*, pp. 1-27. Doi: 10.1007/s13132-022-00937-8.

Alänge S., Steiber A. (2018), Three operational models for ambidexterity in large corporations, *Triple Helix*, 5(1), 1-25. DOI: 10.1186/S40604-018-0053-9.

Armenia S., Barile S., Iandolo F., Pompei A., & Sicca L. M. (2024), Organisational ambidexterity and knowledge management: A systems perspective towards Smart Model-based Governance, *Systems Research and Behavioral Science*, *41*(3), pp. 439-452.

Asiaei K., Jusoh R., Bontis N. (2018), Intellectual capital and performance measurement systems in Iran, *Journal of Intellectual Capital*. Doi: 10.1108/JIC-11-2016-0125.

Baldini N. (2010), Do royalties really foster university patenting activity? An answer from Italy, *Technovation*, 30(2), pp. 109-116. Doi: 10.1016/j.technovation.2009.09.007.

Baškarada S., Watson J., Cromarty J. (2016), Leadership and organizational ambidexterity, *Journal of Management Development*, 35(6), pp. 778-788. Doi:10.1108/JMD-01-2016-0004.

Bathelt H., Kogler D. F., Munro A. K. (2010), A knowledge-based typology of university spin-offs in the context of regional economic development. *Technovation*, 30(9-10), pp. 519-532. Doi: 10.1016/j.technovation.2010.04.003

Becker G. S. (1964), *Human capital: A theoretical and empirical analysis, with special reference to education*, Chicago: University of Chicago Press.

Bell E., Bryman A., & Harley B. (2022), *Business research methods*, Oxford university press.

Benner M. J., Tushman M. L. (2003), Exploitation, exploration, and process management: The productivity dilemma revisited, *Academy of management review*, 28(2), pp. 238-256. Doi: 10.5465/amr.2003.9416096.

Birkinshaw J., & Gupta K. (2013), Clarifying the distinctive contribution of ambidexterity to the field of organization studies, *Academy of Management Perspectives*, 27(4), pp. 287-298. Doi: 10.5465/amp.2012.0167.

Bontis N. (1998), Intellectual capital: an exploratory study that develops measures and models, *Management decision*, 36(2), pp. 63-76. Doi: 10.1108/00251749810204142.

Breznitz S. M., O'Shea R. P., Allen T. J. (2008), University commercialization strategies in the development of regional bioclusters, *Journal of product innovation management*, 25(2), pp. 129-142.

Chen Y. (2017), Dynamic ambidexterity: How innovators manage exploration and exploitation, *Business Horizons*, *60*(3), pp. 385-394

Conti G., Granieri M., Piccaluga A. (2011), *La gestione del trsferimento tecnologico. Strategie, Modelli e Strumenti,* Springer, Milano. Doi: 10.1007/978-88-470-1902-7.

Davila A., Foster G., & Jia N. (2015), The valuation of management control systems in start-up companies: International field-based evidence, *European Accounting Review*, *24*(2), pp. 207-239.

Dezi L., Ferraris A., Papa A., & Vrontis D. (2019), The role of external embeddedness and knowledge management as antecedents of ambidexterity and performances in Italian SMEs, *IEEE Transactions on Engineering Management*, 68(2), pp. 360-369. Doi: 10.1109/TEM.2019.2916378.

Di Berardino D. (2013), Intangible assets and project management in academic spin offs, In *Electronic International Interdisciplinary Conference* (pp. 26-38). EDIS PUBLISHING INSTITUTION OF THE UNIVERSITY OF ZILINA.

Dortega P. F, Costa R. V., Fernandez C. F. J. (2013), Product innovation and relational capital: Evidence from Portugal, *Electronic Journal of Knowledge Management*, 11(4), pp. 295-308.

Duncan R. B. (1976), The ambidextrous organization: Designing dual structures for innovation, *The management of organization*, 1(1), pp. 167-188.

Elia G., Lerro A., Passiante G., & Schiuma G. (2017), An Intellectual Capital perspective for Business Model Innovation in technology-intensive industries: empirical evidences from Italian spin-offs, *Knowledge management research & practice*, *15*, pp. 155-168.

Etzkowitz H. (2003), Research groups as quasi-firms: the invention of the entrepreneurial university, *Research Policy*, 32(1), pp. 109-121. Doi: 10.1016/S0048-7333(02)00009-4.

Feldman J.M., & Klofsten M. (2000), Medium-sized firms and the limits to growth: A case study in the evolution of a spin-off firm, *European Planning Studies*, *8*(5), pp. 631-650.

Giakoumelou A., Salvi A., Kvasova O., & Rizomyliotis I. (2023), The start-up's roadmap to private equity financing: substituting discounts with a premium in valuation for growth, *International Journal of Entrepreneurial Behavior & Research*.

Gell-Mann M. (1994), *The Quark and the Jaguar Adventures in the Simple and the Complex*, New York, W. H. Freeman.

Güttel W.H. and Konlechner S.W. (2009), Continuously hanging by a thread: managing contextually ambidextrous organizations', *Schmalenbach Business Review*, 61, pp. 149-171.

Guerrero M., Urbano D. (2012), The development of an entrepreneurial university, *Journal of Technology Transfer*, 37(1), pp. 43-74. Doi 10.1007/s10961-010-9171-x.

Habersam M., & Piber M. (2003), Exploring intellectual capital in hospitals: two qualitative case studies in Italy and Austria, *European Accounting Review*, *12*(4), pp. 753-779.

Hall B. H., Rosenberg N. (Eds.) (2010), *Handbook of the Economics of Innovation* (Vol. 1). Elsevier.

Harris L. (2000), A theory of intellectual capital, *Advances in Developing Human Resources*, 2(1), pp. 22-37. Doi: 10.1177/152342230000200104.

Hair Jr J.F., Celsi W., Money A.H., Samouel P., Page M.J. (2003), *Essentials of Business Research Methods*, Wiley.

Hayaeian S., Hesarzadeh R., & Abbaszadeh M. R. (2021), The impact of knowledge management strategies on the relationship between intellectual capital and innovation: Evidence from SMEs, *Journal of Intellectual Capital*. Doi: 10.1108/JIC-07-2020-0240.

Helm R., and Mauroner O. (2007), Success of research-based spin-offs. State-of-the-art and guidelines for further research, *Review of Managerial Science*, *1*, pp. 237-270.

Herremans I. M., & Isaac R. G. (2005), Management planning and control: Supporting knowledge-intensive organizations, *The learning organization*, *12*(4), pp. 313-329.

Hormiga E., Batista-Canino R.M., and Sanchez-Medina A. (2011), The role of intellectual capital in the success of new ventures, *International entrepreneurship and management journal*, *7*(1), pp.71-92.

Huang S., Battisti M., & Pickernell D. (2021), CEO regulatory focus as the microfoundation of organizational ambidexterity: A configurational approach, *Journal of Business Research*, 125, pp. 26-38. Doi: 10.1016/j.jbusres.2020.12.004.

Iacobucci D., Iacopini A., Micozzi A., Orsini S. (2010), Fostering Entrepreneurship in Academic Spin-offs, *International Journal of Entrepreneurship and Small Business*, Inderscience Enterprises Ltd. Doi: 10.1504/IJESB.2011.039689.

Jansen J. J., Simsek Z., Cao Q. (2012), Ambidexterity and performance in multiunit contexts: Cross-level moderating effects of structural and resource attributes, *Strategic management journal*, *33*(11), pp. 1286-1303. Doi: 10.1002/smj.1977.

Jia N. (2018), Corporate innovation strategy and stock price crash risk, *Journal of Corporate Finance*, *53*, pp. 155-173.

Joensuu-Salo S., and Viljamaa A. (2024), The relationship between digital orientation, organizational ambidexterity, and growth strategies of rural SMEs in time of crisis, *The International Journal of Entrepreneurship and Innovation*, *25*(2), pp. 128-141.

Junni P., Sarala R. M., Taras V. A. S., Tarba S. Y. (2013), Organizational ambidexterity and performance: A meta-analysis, *Academy of Management Perspectives*, *27*(4), pp. 299-312. Doi: 10.5465/amp.2012.0015.

Jurksiene L., Pundziene A. (2016). The relationship between dynamic capabilities and firm competitive advantage: The mediating role of organizational ambidexterity, *European Business Review, 28*(4), pp. 431-448. Doi: 10.1108/EBR-09-2015-0088.

Kang S.C., Morris S.S. and Snell S.A. (2007), Relational archetypes, organizational learning, and value creation: extending the human resource architecture, *Academy of Management Review*, *32*, pp. 236-56.

Kang S. C., & Snell S. A. (2009), Intellectual capital architectures and ambidextrous learning: a framework for human resource management, *Journal of management studies*, *46*(1), pp. 65-92.

Kamukama N. (2013), Intellectual capital: company's invisible source of competitive

advantage, *Competitiveness Review: An International Business Journal, 23*(3), pp. 260-283.
Karasneh A. A. F. (2022), Revitalizing the BSC through knowledge management: The mediating role of intellectual capital, *Journal of Public Affairs, 22*(1), 2359. Doi: 10.1002/pa.2359.
Lazzeri F., Piccaluga A. (2012), Le imprese spin-off della ricerca pubblica: convinzioni, realtà e prospettive future, *Economia e società regionale*, (1). Doi: 10.3280/ES2012-001003.
Kauffman S.A. (1993), *Origins of Order: Self Organization and Selection in Evolution*, Oxford: Oxford University Press.
Kearns G. S. (2007), How the internal environment impacts information systems project success: An investigation of exploitative and explorative firms, *Journal of Computer Information Systems*, *48*(1), pp. 63-75.
Lam A. (2011), What motivates academic scientists to engage in research commercialization:'Gold','ribbon'or 'puzzle'?, *Research policy*, *40*(10), pp. 1354-1368.
Leitner K, H., Curaj A., Elena-Perez, Fazlagic J., Kalemis K., Martinaitis Z., Secundo G., Sicilia M., (2014), *A strategic approach for intellectual capital management in European universities. Guidelines for implementation*, Bucharest: UEFISCDI Blueprint Series No. 1. Executive Agency for Higher Education, Research, Development and Innovation Funding.
Leitner K. H., Warden C. (2004), Managing and reporting knowledge-based resources and processes in research organizations: specifics, lessons learned and perspectives, *Management Accounting Research, 15*(1), pp. 33-51. Doi: 10.1016/j.mar.2003.10.005.
Lev B., Schwartz A. (1971), On the use of the economic concept of human capital in financial statements, *The accounting review*, 46(1), pp. 103-112.
Levinthal D.A. and March J.G. (1993), The myopia of learning, *Strategic Management Journal*, 14, pp. 95-112.
Liang L., Chen S., Wu D., & Wu X. (2024), How established firms build digital capabilities for business model innovation: An exploratory case study, *Journal of Engineering and Technology Management*, *72*, 101819.
Likert R. (1932), A technique for the measurement of attitudes. *Archives of psychology*.
Lin C., and Chang C. C. (2015), A patent-based study of the relationships among technological portfolio, ambidextrous innovation, and firm performance, *Technology Analysis & Strategic Management*, *27*(10), pp. 1193-1211.
Lin C. J., and Chen C. C. (2015), The responsive-integrative framework, outside-in and inside-out mechanisms and ambidextrous innovations, *International Journal of Technology Management*, *67*(2-4), pp. 148-173.
Lombardi R., Schimperna F. (2021), An introduction to network analysis in intellectual capital research, *Research Handbook on Intellectual Capital and Business*, pp. 274-289.
Lombardi R., Cano-Rubio M., Schimperna F., & Trequattrini R. (2021a), The impact of smart technologies on the management and strategic control: a structured literature review, *Management Control*, suppl. 1, pp. 11-30. Doi: 10.3280/MACO2021-001-S1002.
Lombardi R., Schimperna F., & Marcello R. (2021b), Human capital and smart tourism's development: primary evidence, *International Journal of Digital Culture and Electronic Tourism*, *3*(3-4), pp. 294-309. Doi: 10.1504/IJDCET.2021.116492.
Mahmood T., Mubarik M. S. (2020), Balancing innovation and exploitation in the fourth industrial revolution: Role of intellectual capital and technology absorptive capacity, *Technological Forecasting and Social Change*, 160, Doi: 10.1016/j.techfore.2020.120248.

Mahmood T., Mubarik M. S., Islam T., Naghavi N. (2021), Ambidextrous intellectual capital (AIC): a measuring framework, In *The Dynamics of Intellectual Capital in Current Era* (pp. 1-30). Singapore: Springer Singapore. Doi: 10.1007/978-981-16-1692-1_1.

Marasca S., Marchi L., Riccaboni A. (2013), *Controllo di gestione: metodologie e strumenti. Amministrazione, finanza e controllo*, Knowita.

March J.G. (1991), Exploration and exploitation in organizational learning, *Organization Science*, 2, pp. 71-87.

Mariani G., Carlesi A., & Scarfò A. A. (2018), Academic spinoffs as a value driver for intellectual capital: The case of the University of Pisa. *Journal of Intellectual Capital*, *19*(1), pp. 202-226.

Mok K.H. (2015), The quest for global competitiveness: promotion of innovation and entrepreneurial universities in Singapore, *Higher Education Policy*, 28(1), pp. 91-106.

Mubarik M. S., Naghavi N., Mahmood R. T. (2019), Intellectual capital, competitive advantage and the ambidexterity liaison, *Human Systems Management*, 38(3), pp. 267-277. Doi: 10.3233/HSM-180409.

Muchmore S., Ragsdell G., Colechin M., & Story V. (2018), Knowledge exploitation and value creation: Lessons from the energy sector, *ICICKM 2018, 207.*

Nappo F., Lardo A., Bianchi M. T., & Schimperna F. (2023), The impact of digitalisation on professional football clubs, *Management Control*, (2), pp. 117-136. Doi: 10.3280/MACO2023-002006.

Nonaka I. (1994), A dynamic theory of organizational knowledge creation, *Organization Science*, 5(4), pp. 14-37.

Oakey R. P., Hare P. G., Balazs K. (1996), Strategies for the exploitation of intelligence capital: evidence from Hungarian research institutes, *R&D Management, 26*(1), pp. 67-82. Doi: 10.1111/j.1467-9310.1996.tb00930.x.

O'Reilly C. A., & Tushman M. L. (2004), The ambidextrous organization. *Harvard business review*, *82*(4), pp. 74-83.

O'Reilly C. A., III., & Tushman M. L. (2013), Organizational ambidexterity: Past, present, and future. *Academy of Management Perspectives, 27*(4), pp. 324-338. Doi: 10.5465/amp.2013.0025.

Park O., Bae J., & Hong W. (2019), High-commitment HRM system, HR capability, and ambidextrous technological innovation, *The International Journal of Human Resource Management, 30*(9), pp. 1526-1548. Doi: 10.1080/09585192.2017.1296880.

Pasamar S., Lopez-Cabrales A., Valle-Cabrales R. (2015), Ambidexterity and intellectual capital architectures for developing dynamic capabilities: Towards a research agenda, *European Journal of International Management, 9*(1), pp. 74-87.

Pennings J. M., Lee K., & Witteloostuijn A. V. (1998). Human capital, social capital, and firm dissolution, *Academy of management Journal*, *41*(4), pp. 425-440.

Petty R., Guthrie J. (2000), Intellectual capital literature review: measurement, reporting and management, *Journal of intellectual capital, 1*(2), pp. 155-176. Doi: 10.1108/14691930010348731.

Pradana M., Pérez-Luño A., & Fuentes-Blasco M. (2020), Innovation as the key to gain performance from absorptive capacity and human capital, *Technology Analysis & Strategic Management, 32*(7), pp. 822-834. Doi: 10.1080/09537325.2020.1714578.

Prahalad C. K., Ramaswamy V. (2000), Co-opting customer competence, *Harvard business review, 78*(1), pp. 79-90. Doi: 10.1108/14691930110385900.

Presenza A., and Petruzzelli A. M. (2019), Investigating business model innovation in Haute Cuisine. Role and behavior of chef-entrepreneurs, *International Journal of Hospitality Management*, *82*, pp. 101-111.

Raisch S., Birkinshaw J. (2008), Organizational ambidexterity: Antecedents, outcomes, and moderators, *Journal of management, 34*(3), pp. 375-409. Doi: 10.1177/0149206308316058.
Raisch S. and Tushman M.L. (2016), Growing new corporate businesses. From initiation to graduation, *Organization Science, 27*(5), pp. 1237-1257.
Ramírez Córcoles Y., Santos Peñalver J. F., & Tejada Ponce Á. (2011), Intellectual capital in Spanish public universities: stakeholders' information needs, *Journal of Intellectual capital*, *12*(3), pp. 356-376.
Rasmussen E., Mosey S., Wright M. (2011), The evolution of entrepreneurial competencies: A longitudinal study of university spin-off venture emergence, *Journal of Management Studies, 48*(6), pp. 1314-1345. Doi: 10.1111/j.1467-6486.2010.00995.x.
Rehman S. U., Elrehail H., Alsaad A., & Bhatti A. (2021), Intellectual capital and innovative performance: A mediation-moderation perspective, *Journal of Intellectual Capital, 25*(3), pp .998-1024. Doi: 10.1108/JIC-04-2020-0109.
Rothaermel F. T., Agung S. D., & Jiang L. (2007), University entrepreneurship: A taxonomy of the literature, *Industrial and Corporate Change, 16*(4), pp. 691-791.
Russo S., Schimperna F., Lombardi R., & Ruggiero P. (2022), Sustainability performance and social media: An explorative analysis, *Meditari Accountancy Research*, *30*(4), pp. 1118-1140. Doi: 10.1108/MEDAR-03-2021-1227.
Sánchez M. P, Elena S., Castrillo R. (2009), Intellectual capital dynamics in universities: a reporting model, *Journal of intellectual capital*, 10(2), pp. 307-324. Doi: 10.1108/14691930910952687.
Sanchez M. P., Elena S. (2006), Intellectual capital in universities: Improving transparency and internal management, *Journal of Intellectual Capital*, 7(4), pp. 529-548. Doi: 10.1108/14691930610709158.
Schimperna F., Nappo F., & Marsigalia B. (2021a), Student entrepreneurship in universities: The state-of-the-art, *Administrative Sciences*, *12*(1), p. 5. Doi: 10.3390/admsci12010005.
Schimperna F., Lombardi R., & Belyaeva Z. (2021b), Technological transformation, culinary tourism and stakeholder engagement: Emerging trends from a systematic literature review, *Journal of Place Management and Development*, *14*(1), pp. 66-80. Doi: 10.1108/JPMD-03-2020-0028.
Secundo G., Dumay J., Schiuma G., & Passiante G, (2016), Managing intellectual capital through a collective intelligence approach: An integrated framework for universities, *Journal of Intellectual Capital*, 17(2), pp. 298-319. Doi: 10.1108/JIC-05-2015-0046.
Secundo G., Margherita A., Elia G., & Passiante G. (2010), Intangible assets in higher education and research: mission, performance or both?, *Journal of intellectual capital*, *11*(2), pp. 140-157.
Shah S.K., Pahnke E.C. (2014), Parting the ivory curtain: understanding how universities support a diverse set of start-ups, *The Journal of Technology Transfer*, 39(5), pp. 780-792. Doi: 10.1007/s10961-014-9336-0.
Simsek Z. (2009), Organizational ambidexterity: Towards a multilevel understanding, *Journal of Management Studies, 46*(4), pp. 597-624. Doi: 10.1111/j.1467-6486.2009.00828.x.
Stewart T.A. (1997), *Intellectual Capital: The New Wealth of Organisations*, Doubleday-Currency, London.
Stewart T., & Ruckdeschel C. (1998), Intellectual capital: The new wealth of organizations, *Performance Improvement, 37*(7), pp. 56-59.
Stoneman P. (1995), *Handbook of the economics of innovation and technological change*. Blackwell.

Subramaniam M., and Youndt M.A. (2005), The influence of intellectual capital on the types of innovative capabilities, *The Academy of Management Journal, 48*(3), pp. 450-63.

Swart J., and Kinnie N. (2010), Organisational learning, knowledge assets and HR practices in professional service firms, *Human Resource Management Journal, 20*(1), pp. 64-79.

Todericiu R., Şerban A. (2015), Intellectual Capital and its relationship with universities, *Procedia Economics and Finance, 27,* pp. 713-717. doi: 10.1016/S2212-5671(15)01052-7.

Trequattrini R. (2008), *Conoscenza ed economia aziendale. Elementi di teoria*, Edizioni Scientifiche Italiane SpA, Napoli.

Trequattrini R., Nappo F., Lardo A., & Cuozzo B. (2018 a), Intellectual capital and gender capital: The case of Italian universities, In *Gender Issues in Business and Economics: Selections from the 2017 Ipazia Workshop on Gender* (pp. 159-173). Springer International Publishing.

Trequattrini R., Lombardi R., Lardo A., Cuozzo B. (2018 b), The impact of entrepreneurial universities on regional growth: a local intellectual capital perspective, *Journal of the Knowledge Economy, 9,* pp. 199-211. Doi: 10.1007/s13132-015-0334-8.

Trequattrini R., Russo G., Nappo F. (2008), Le fonti di finanziamento delle università tra vincoli normativi e nuove opportunità. *IMPRESA AMBIENTE MANAGEMENT*, (3), pp. 255-287.

Turner N., Maylor H., and Swart J. (2015), Ambidexterity in projects: An intellectual capital perspective, *International Journal of Project Management, 33*(1), pp. 177-188**.**

Tushman M. L., O'Reilly III C. A. (1996), Ambidextrous organizations: Managing evolutionary and revolutionary change, *California management review, 38*(4), pp. 8-29. Doi: 10.2307/41165852.

Tushman M., O'Reilly III C., Harreld B. (2015), Leading proactive punctuated change, In *Leading sustainable change: An organizational perspective*, pp.250-270.

Veltri S., Mastroleo G., Schaffhauser-Linzatti M. (2014), Measuring intellectual capital in the university sector using a fuzzy logic expert system, *Knowledge Management Research & Practice, 12,* pp. 175-192. Doi: 10.1057/kmrp.2012.53.

Wennberg K., Wiklund J., & Wright M. (2011), The effectiveness of university knowledge spillovers: Performance differences between university spin-offs and corporate spin-offs, *Research Policy, 40*, pp. 1128-1143.

Weqar F., Khan A. M., Raushan M., & Haque S. M. (2021), Measuring the impact of intellectual capital on the financial performance of the finance sector of India*, Journal of the Knowledge Economy, 12*(3), pp. 1134-1151. Doi: 10.1007/s13132-020-00654-0.

Yaseen S. G., Dajani D., and Hasan Y. (2016), The impact of intellectual capital on the competitive advantage: Applied study in Jordanian telecommunication companies, *Computers in human behavior, 62,* pp. 168-175.

Zhang S. K., Tang T. Y., & Wu F. (2021), The ambidextrous patterns for managing technological and marketing innovation, *Industrial Marketing Management, 92*, pp. 34-44. Doi: 10.1016/j.indmarman.2020.10.010.

The impact of board gender diversity on healthcare financial performance during Covid-19: Evidence from Italian Healthcare Organizations

Nadia Ardito, Natalia Aversano, Diana Ferullo, Paolo Tartaglia Polcini[*]

Received:12 November 2023
Accepted: 12 June 2024

Abstract

Over the past few decades, European institutions and policymakers have promoted gender diversity in management and strategic leadership roles.
Prior literature has highlighted the importance of board gender diversity; nevertheless, previous studies have mainly focused on the private sector, while the public sector – particularly the healthcare sector – remains under-investigated.
Hence, to fill this gap, the present paper aims to examine the impact of board gender diversity on Italian public health outcomes during the COVID-19 pandemic to address the calls for more excellent representation of women in leadership roles.
The research methodology uses an OLS linear regression model to examine the relationship between the number of women in top positions in Italian Healthcare Organizations (roles of general, administrative, and health managers) and their financial and non-financial performance.
Results show that women's involvement in governance positively impacts the performance of Italian healthcare organisations, while no significant association has emerged regarding non-financial performance.
This study could represent a starting point for implementing measures that focus on the health sector. The sector has been experiencing a severe crisis for years and, therefore, needs innovative strategies for its relaunch.

Keywords: Board Gender Diversity, Public Healthcare Organizations, Financial Performance, Non-financial Performance, Italy, COVID-19.

[*] University of Salerno, Department of Business Studies and Research. Corresponding author: nardito@unisa.it.

Management Control (ISSN 2239-0391, ISSNe 2239-4397), 2024, 2 – Special issue
Doi: 10.3280/MACO2024-002-S1011

1. Introduction

The present study aims to analyse the issue of gender diversity in Italian healthcare organisations by investigating the relationship between gender diversity – understood as the presence of women in the three top governance figures of healthcare organisations – and financial and non-financial performance.

The healthcare sector needs creative approaches and methods to deal with its changing and unstable environment, especially in light of the recent COVID-19 pandemic (Vrontis et al., 2022; Fissi and Grazzini, 2021). The board and the managerial leaders of Healthcare Organisations (HCOs) represent the main actors that can reduce this uncertainty and adequately manage the organisation's relations with its external environment (Reguera-Alvarado et al., 2017). In fact, according to a broader definition of Corporate Governance, HCOs' board of directors must balance the need to maintain adequate financial performance with the primary objective of their community's well-being (De Regge and Eeckloo, 2020).

Within these premises, gender diversity played a relevant role among the various aspects relevant to this purpose. Given its importance as the central governance mechanism (Uyar et al., 2020), gender balance on boards of directors is widely promoted by various national and international regulatory provisions and recommendations. Moreover, it represents one of the primary objectives of the 2030 Agenda for Sustainable Development of all United Nations member countries. The presence of women in top management and governance roles of HCOs would be desirable because the dynamic and inclusive leadership and the diversity of knowledge and skills ensured by the presence of women in the HCOs' governing boards may represent a leading factor in improving financial (Reguera-Alvarado et al., 2017).

The literature emphasises the importance of gender diversity on company boards, highlighting how their presence positively influences social responsibility and economic performance. However, previous studies have mainly focused on the private sector, while only a few studies analysed this relationship in the public sector (Naranjo-Gil et al., 2008; Abor, 2017; Saporito et al., 2019; Büchner et al., 2014; Tartaglia-Polcini et al., 2021; Naciti et al., 2021; Arena et al., 2019; Sicoli et al., 2021; Aversano et al., 2023).

Therefore, the present paper addresses the call for more excellent representation of women in leadership roles by exploring the impact of gender diversity on public HCOs` outcomes during the COVID-19 pandemic.

To this aim, the study focuses on 150 Italian public HCOs. The research methodology is based on an OLS regression model to test the association between the presence of women in top positions (role of general, administrative, and health manager) in Italian HCOs and their financial and non-financial performance.

Our results show that although women are underrepresented in the strategic management of Italian public HCOs, their involvement in governance positions positively affects HCOs' financial performance. On the other hand, no significant association has emerged between women's presence at governance positions and HCOs' non-financial performance.

The paper presents several novelties. First, unlike the previous studies, which mainly focused on a single dimension of performance (financial or non-financial), this paper aims to extend our knowledge of the role that gender diversity in HCOs' governance mechanisms plays in driving both financial and non-financial performance.

The second novelty of the paper is that the analysis has been carried out in the context of the COVID-19 pandemic. The third novelty is that this is the first study to use the Compensation Mobility Index as a proxy for financial performance.

This article contributes to the existing academic literature on corporate governance, providing empirical insight into the beneficial effects of board diversity in an under-explored context such as healthcare.

The results could also have practical and theoretical implications. This research could help standard-setters and practitioners identify performance indicators and governance dimensions. Academics could also benefit from this research, which can be used as a reference for developing similar analyses in private HCOs or different geographical contexts.

The present study is structured as follows: the first section presents the literature review about performance measurement and board gender diversity in the healthcare sector; the second section illustrates the research hypothesis; the third outlines the research context; the fourth section describes the data set and the research method, while the remaining sections discuss the findings and conclusions.

2. Literature review

2.1 Performance management in the Healthcare sector

In recent decades, several European countries have undergone a modernisation process in their public administration (PA) sector, changing how they operate and organise their systems (Vinci et al., 2022). In the New Public Management wave (Hood, 1995), private-inspired theoretical principles and operational tools were introduced to lead a process of "corporatisation" of PA. The aim is to make the PA more responsive to citizens' needs, making it leaner and more competitive. Within the public sector, HCOs have also been involved in a profound process of change as a response to the more pressing need for performance monitoring and measurement as well as to the intense environmental, economic, political, and social pressures (Tartaglia-Polcini et al., 2021; Pavan et al., 2019).

The need to guarantee high levels of performance and respond to stakeholders' expectations about the delivery of high-quality services are the main motivations behind HCOs' transformation process (Cavicchi and Vagnoni, 2017). HCOs have to be transparent and accountable to their stakeholders, and in particular to taxpayers and the government (Purbey et al., 2007), for the performances achieved and the use of public resources (Andrades-Peña et al., 2021; Pavan et al., 2019). Accordingly, HCOs must appropriately balance the need to maintain adequate levels of economic-financial performance with the primary objective of caring for their patients' healthcare (De Regge and Eeckloo, 2020). As a result, HCOs have begun to emphasise the efficiency and effectiveness of public service delivery and the increased need for performance measurement (Cifalinò and Vendramini, 2015; Capalbo et al., 2023).

More recently, with the COVID-19 pandemic, there has been a growing need for performance measurement systems in the healthcare sector (Betto et al., 2022). Following these circumstances, many researchers have become increasingly interested in the role of Performance Measurement Systems (PMS) in the healthcare sector (Capalbo et al., 2023).

It should be emphasised that applying a PMS and interpreting the results must consider the peculiarities of healthcare organisations' management. For example, Chang (2006) studied the responses of local health authorities to the performance measures indicated by the central government. His research has shown that health authority managers perceive the indicators chosen by central governments as a top-down control mechanism, unable to capture the factors that influence local performance.

In light of these difficulties, the study of Cifalinò and Vendramini (2015) evidenced that Italian local health units still use performance measures little. Also, Giuffrida's (2000) study discovered that local healthcare organisations were less effective than other HCOs.

Although several studies have focused on the predominant use of economic-financial indicators to measure corporate performance, it is worth pointing out that HCOs' performance is characterised by a multidimensional profile. Thus, several studies on PMS in the healthcare sector highlighted the need for a multidimensional perspective that goes beyond the traditional financial measures and challenges the complexity of HCOs (e.g., Handler et al., 2001; Purbey et al., 2007; Yang et al., 2009; Nuti et al., 2013., Yuen et al., 2012; Vrontis et al., 2022; Aversano et al., 2024).

In Italy, some authors have recognised health mobility as a financial HCO performance metric that is relevant to evaluating the quality of HCOs (Posteraro, 2017; Gigio et al., 2018; Porcu, 2007; Cinquini et al., 2005; Cinelli et al., 2021).

Posteraro (2017) analysed the causes and effects of health mobility in Italy. He concludes that most patients' movements between regions are related to hospitalisations carried out to obtain better service than those within the region of residence, where these are also available but are considered not sufficiently reliable. The effect is economic since it raises their need to compensate for the costs incurred for services rendered to citizens in different regional areas other than those receiving per capita regional funding. Gigio et al. (2018) compared the mobility of patients in various Italian regions in 2014, concluding that passive mobility tends to reflect, above all, the lower quality, actual or perceived, of the respective health systems. Porcu et al. (2007) presented a method of analysing Sardinia's active and passive extra-regional health mobility in 2001-2004. The analysis has shown that health mobility is linked to efficiency indicators. Cinquini et al. (2005) analysed the HCOs' performance in the Tuscan region in the year 2004, using the compensation index – which expresses the attraction or the drain of resources as a percentage of total production costs – as economic performance indicator. Lastly, Cinelli et al. (2021) evaluated Italian regional mobility for the year 2019 using different variables. The authors recognised health mobility among the leading indicators of managerial effectiveness.

2.2 Corporate Governance and Gender Diversity in Healthcare Organizations

Corporate Governance is a critical driver of accountability and transparency in the healthcare sector. Managers who control the organisations are accountable to those who contribute resources and to all stakeholders, such as employees, suppliers, customers and the community (Brennan, 2021).

In recent years, HCOs have faced pressing challenges. The months of the COVID-19 pandemic, especially in the acute phases of increased infections and hospitalisation, were and still are periods of intense and absolute management responsibility (Longo and Ricci, 2020). In particular, the urgency has imposed fast and autonomous choices by HCOs' strategic governance

(Longo and Ricci, 2020). Within these premises, board gender diversity has become a lever to improve organisations' performance by enhancing problem-solving abilities and internal process efficiency (Büchner et al., 2014; Rainero et al., 2019; Lu and Herremans, 2019).

Various national and international regulatory provisions and recommendations widely promote gender balance on the board of directors. The increasing proliferation of gender-oriented reforms has effectively facilitated women's involvement in the managerial positions of PSOs (Borgonovi and Catuogno, 2021).

In 2020, the European Commission launched a new strategy for the next five years based on the Sustainability Goal 5, "Gender Equality," set out in the 2030 Agenda for Sustainable Development adopted by the United Nations (UN, 2015), highlighting the need for the growth of the "pink quotas" in all positions of responsibility both in the political and economic field (EC, 2020).

Accordingly, in the document "A Union of Equality: Gender Equality Strategy 2020-2025" (EC, 2020), the European Commission restates that inclusion and diversity are essential elements to create innovative approaches aimed at improving all companies' performance, generally contributing to the growth of the European economic system (EU, 2020). The European Commission also urged the European Parliament and all Member States to adopt measures that increase the gender balance in all management and leadership positions (EC, 2020).

Also, the literature emphasises the importance of gender diversity in healthcare leadership positions, highlighting how their presence can represent a crucial success factor for productivity, innovation, and overall performance (Fusco et al., 2021; Paoloni et al., 2021; El Chaarani and Raimi, 2022).

Some authors underline the importance of women in governmental positions (task forces, legislation of public expenditures) for managing the COVID-19 pandemic (Van Daalen et al., 2020; Leung et al., 2020; Martínez-Córdoba et al., 2021).

Van Daalen et al. (2020) provided quantitative data on task forces organised to prevent, monitor, and mitigate COVID-19 and found that, in global health governance, collective efforts in policymaking continue to overlook opportunities to create inclusive and comprehensive decision-making. The COVID-19 pandemic response needs the inclusion of diverse perspectives, experiences, and expertise in global health leadership. Leung et al. (2020) analysed the impact of gender equity on public health outcomes using the COVID-19 pandemic as its research setting. The results show that gender equity and the proportion of women in the legislature on public health expenditure significantly impact the number of diagnosed and critical cases, thus confirming the importance of women's role in managing public health outcomes. Lastly, Martínez-Córdoba et al. (2021) analysed the effect of female leadership on decision-making during the pandemic. Findings show that the qualities of women who show temperance and moderation in government actions when facing risky situations may be the cause of more efficient management. In fact, during the management of the pandemic, countries led by women are more efficient than those led by men. (Martínez-Córdoba et al., 2021).

3. Theoretical Background

Despite the lack of a single model that can explain the impact of women in management positions on corporate performance (Tartaglia-Polcini et al., 2021), the *Resource Dependence Theory* (RDT) is widely considered to be an appropriate theoretical reference for explaining the relationship between HCOs' board gender diversity and their performance (Pfeffer and Salancik, 2003; Abor, 2017; Reguera-Alvarado et al., 2017; Uyar et al., 2020; Tartaglia-Polcini et al., 2021).

The RDT defines an organisation as an actor operating within an open system with which it interacts to acquire and exchange resources that it needs to create value for its stakeholders (Pfeffer and Salancik, 2003). However, this relationship creates uncertainty and dependence between the organisation and the external environment in which it operates and draws the necessary human, strategic, and financial resources to survive (Pfeffer and Salancik, 2003). According to the RDT, the board and the managerial leaders of the organisation represent the main actors able to reduce this uncertainty and adequately govern the relations with the external environment to obtain a continuous flow of resources (Reguera-Alvarado et al., 2017; Aversano et al., 2023).

There are usually a variety of backgrounds and expertise represented on hospital boards (Abor, 2017), and each director or manager has unique characteristics and skills. Therefore, increasing gender diversity – by appointing a more significant number of women to the board – allows the company to grow and make the general stock of knowledge, skills, expertise, and professional skills available more heterogeneous (Lu and Herremans, 2019; Uyar et al., 2020).

Thus, according to this theoretical perspective, the increase in gender diversity on the board and in top management positions is a fundamental driver for obtaining the critical resources for the survival and success of the organisation and, consequently, for the achievement of superior performance (Reguera-Alvarado et al., 2017).

Following this theoretical perspective, several studies empirically investigated the relationship between the presence of women on HCOs' boards or top management positions (e.g., Chief Executive Officer – CEO) and their financial and non-financial performance (Naranjo-Gil et al., 2008; Abor, 2017; Saporito et al., 2019; Büchner et al., 2014; Tartaglia-Polcini et al., 2021; Naciti et al., 2021; Arena et al., 2019; Sicoli et al., 2021).

Naranjo-Gil et al. (2008) showed how, in Spanish public hospitals, heterogeneity in the composition of top corporate management fosters strategic change and higher level of performance. Abor's (2017) study – conducted on a sample of 100 Ghanaian hospitals – also highlighted the need to increase the presence of women in governance and management leadership positions of healthcare organisations to achieve higher performance levels. On the other hand, the study by Saporito et al. (2019) highlighted the benefits and effectiveness of women's transformational leadership in the healthcare sector. Furthermore, it shows that this leadership style is presumed to harbour economic and non-economic benefits (i.e., the effectiveness of health care delivery).

In Germany, Büchner et al. (2014) highlighted how the gender diversity of HCOs' government affects the effectiveness of the strategies implemented and reflection on financial performance, measured as ROI.

Tartaglia-Polcini et al. (2021) analysed the association between the presence of women in top positions and financial performance in the context of Italian HCOs. Their findings show that a more expansive presence of women in managerial positions positively impacts financial performance, measured as ROA. Naciti et al. (2021) investigated the relationship between gender diversity and Italian HCOs' financial performance. The evidence showed a significant relationship between gender diversity and economic-financial performance, measured as the "solvency index," a measure of an organisation's ability to meet short-range obligations. Sicoli et al. (2021) conducted a study on a sample of a group of 39 Italian HCOs to assess whether the presence of women on the boards of directors affects company performance. The results suggest that the presence of women is positively related to the performance index, measured as ROE.

El Chaarani and Raimi (2022) conducted a cross-sectional survey employing a model to predict multivariate causal relationships between diversity, entrepreneurial innovation, and performance of the Lebanese healthcare sector during the COVID-19 pandemic. The results show that gender diversity is a crucial success factor for workforce performance, as it can increase both process and organisational innovation and improve organisational performance and patient satisfaction.

Differently, Arena et al. (2019) conducted a study on a sample of 102

HCOs in 2015, examining the possible association between the presence of women in top management teams and financial and non-financial performance. The study highlighted a negative relationship between gender diversity and the non-financial performance of HCOs, while no significant association has emerged about financial performance.

Lastly, Vrontis et al. (2022) analysed 48 Lebanese HCOs during the COVID-19 pandemic. Their study reveals that dynamic managerial innovative practices positively impact competitive advantage and non-financial performance.

Accordingly, based on the above arguments, this study aims to contribute to the existing literature by answering the following research question:

RQ: Does board gender diversity affect healthcare organisations' financial and non-financial performance?

To answer the research question, the following hypotheses have been posed:

H1: Board gender diversity of HCO positively affects HCO's financial performance.

H2: Board gender diversity of HCO negatively affects HCO's non-financial performance.

This study focuses on a sample of Italian public HCOs. The Italian National Health System (INHS) was considered an appropriate research context to be investigated as, in recent years, it has been affected by several NPM-based reforms that have resulted in a redesign of the internal governance mechanisms of public HCOs (Vinci et al., 2022) and have promoted HCOs' strategic management as a crucial actor in decision-making system (Manes-Rossi et al., 2020)

The following section illustrates the structure and the peculiarity of the Italian National Health System.

4. Setting the context: The Italian National Healthcare System

As a result of the NPM movement in the 1990s, the Italian National Healthcare Service (INHS) has been transformed by regionalisation, managerialism, and quasi-markets (Anessi-Pessina and Cantù, 2017).

Regionalisation led the INHS to be organised into two levels: (i) the national government; and (ii) 20 regional governments (including two autonomous provinces). The national government is responsible for the definition of the "essential level of care" (Livelli Essenziali di Assistenza, LEA) and the distribution of tax revenues destined for the public funding of HCOs (Manes-Rossi et al., 2020). The regional governments are given significant autonomy and responsibility as they define the health policies at the regional level and are responsible for monitoring the quality of health services provided at the local level by healthcare organisations (Anessi-Pessina and Cantù, 2017). The growing need to verify the correctness of the management of health resources has led to the introduction of the model of Fiscal Federalism (Law 133/99), which requires the regional governments to finance their health service directly with their taxes (Villa, 2011).

As HCOs are financed in proportion to the volume of services produced, they have become more accountable for their services and their ability to improve the care experience by keeping the per capita costs of health low (Gartner and Lemaire, 2022). In this context, a phenomenon that often increases costs without changing the quality of care is health mobility (Zuccatelli, 2012). Health mobility is a right of citizens who can turn to any HCO, without territorial constraints, to seek an answer to their health needs (Posteraro, 2018; Porcu, 2007).

In Italy, the phenomenon of health mobility is constantly increasing. It is an indirect indicator of the quality of the INHS, and it has significant consequences (economically, financially, and socially) (Posteraro, 2018). From a financial point of view, every patient who receives care from an HCO in a region different from his area of residence generates an income for the destination HCO and a cost of the same amount for the HCO of origin, leading the region of residence to pay the service to the one who takes care of the patient (Anessi-Pessina et al.; 2012, Posteraro, 2018).

Since the d.lgs. 502/92, and, later, with d.lgs. 229/99, the compensation of health mobility has been an essential element in recognising the compelling attractiveness of the best-performing regions and measuring the production capacity of individual HCOs (Brenna and Spandonaro, 2015). It is considered one of the indicators of managerial efficacy; therefore, it can be used to assess the quality of health services offered by different structures or regions, considering the mobility choices of patients as a proxy of the reputation of the same (Cinelli et al., 2021). The service's functioning and operability on the territory are strongly conditioned by the quality of health policies and governance processes defined at the regional level (Villa, 2011).

From a structural point of view, the INHS includes the following HCOs: Local Health Authorities (LHAs), Hospital Enterprises (HEs), University

Hospitals (UHs), University Hospitals integrated into INHS (UHIs), National Hospitals for Scientific Research (NHSRs), and National Hospitals for Scientific Research Foundations (NHSRFs).

Italian HCOs' strategic management involves three different positions as defined by the Italian Law 502/92: *General Manager* (GM), the *Chief Executive Officer* (CEO), and the *Chief Health Officer* (CHO) (Anessi-Pessina and Cantù, 2017; Nicolò et al., 2022). Each of these directors has specific tasks and competencies. The GM is responsible for the general performance of HCOs and the relations with external stakeholders. The CEO is responsible for all administrative procedures and supervises the operational tasks assigned to subordinate managers (Manes-Rossi et al., 2020; Naciti et al., 2021). Lastly, the CHO is a health professional responsible for the procedures related to health protocols (Manes-Rossi et al., 2020; Naciti et al., 2021).

In Italy, HCOs include

5. Research Methodology

In this section, we describe the sample, the data collection, and the empirical model employed in this study.

5.1 Sample Selection, data sources, and data collection

The list of Italian public HCOs was extracted from the open data section of the Italian Ministry of Health website[1]. As a result, a database containing data about the Italian public HCOs up to 2021 has been created. The initial sample comprised 200 Italian Public HCOs: 99 LHAs, 53 HEs, 17 UHs, 9 UHIs, 18 NHSRs, and 4 NHSRFs.

The following phase consisted of collecting governance, board gender diversity, financial and non-financial performance data necessary to test the hypotheses. First, governance information (General Manager, Chief Executive Officer, Chief Health Officer) and information about Localisation, Type, Size, and Age were gathered from the official websites of the sampled HCOs. Second, data about financial and non-financial performance were retrieved from the official financial statements based on accrual accounting published

[1] Source: https://www.dati.salute.gov.it/dati/elencoDataset.jsp?menu=dati, accessed on June 2022.

by HCOs on their websites in a specific section called "Transparent Administration" ("Amministrazione Trasparente").

The data collection refers to 2021 because it is the last year that allowed us to capture the highest number of observations. As a result of this phase, 50 HCOs were erased from the initial sample because of the unavailability of financial data. Accordingly, the final sample comprises 150 units: 80 LHAs, 39 HEs, 13 UHs, 6 UHIs, 9 NHSRs, and 3 NHSRFs (see table 1).

Table 1 – Sample description

Italian Public HCOs	**Code**	**Number**	**%**
Local Health Authority	LHA	80	53%
Hospital Enterprise	HE	39	26%
National Hospital for Scientific Research	NHSR	9	6%
National Hospital for Scientific Research's Foundation	NHSRF	3	2%
University Hospital	UH	13	9%
University Hospital Integrated into INHs	UHI	6	4%
Total		150	100%

Source: author's elaboration

5.2 Empirical Models

Two OLS regression models were estimated to assess the extent to which the selected explanatory variables affect the financial and non-financial performance of the sample of 150 Italian public HCOs.

In addition, the effect of three control variables likely to influence HCOs' performance has been tested to enhance the regression model's accuracy and minimise biases.

Financial performance = β0 + β1 (GM) + β2 (CEO) + β3 (CHO) + β4 (Localisation) + β5 (Type) + β5 (Size) + β6 (Age) + εi.

Non-financial performance = β0 + β1 (GM) + β2 (CEO) + β3 (CHO) + β4 (Localisation) + β5 (Type) + β5 (Size) + β6 (Age) + εi.

- β0 is the constant, and εi is the error or disturbance terms of HCOs.

The Compensation Mobility Index was used as a proxy of financial performance. The compensation mobility index was constructed as a ratio obtained by dividing the balance of active and passive mobility – related to the hospital, outpatient, and rehabilitation activities – and the total cost of production and expresses the attraction or drain of resources in terms of percentage of total production costs. The ratio considers both mobility in regional compensation and invoicing directly between healthcare companies (Cinquini et al., 2005).

The Compensation Mobility Index is a representative financial indicator of the HCOs' efficiency and effectiveness. Accordingly, this index has been used by Cinquini et al. (2005) as the proxy of the HCOs' financial performance, allowing them to examine the degree of achievement of the management economic equilibrium.

The investment in Staff training was used as a proxy for non-financial performance. Research focusing on implementing the balanced scorecard in HCOs (Voelker et al., 2001; Gurd and Gao, 2007; Betto et al., 2022) indicates that staff training is a typical non-financial indicator included in the learning and growth perspective.

The three independent variables (β1–β3) represent the proxy of Gender diversity. Gender diversity in top governance positions was measured by three distinct binary variables (Tartaglia Polcini et al., 2021; Nicolò et al., 2022). Therefore, to consider the peculiarities and relevance of the governance structure of Italian HCOs, we evaluated the women's representation in each of them by using three variables:

- GM = General Manager. This variable is dichotomous and takes the value (1) if a woman holds the position of General Manager and (0) otherwise.
- CEO = Chief Executive Officer. This variable is dichotomous and takes a value of (1) if a woman holds the position of Chief Executive Officer and (0) otherwise.
- CHO = Chief Health Officer. This variable is dichotomous and takes the value (1) if a woman holds the Chief Health Officer position and (0) otherwise.

Furthermore, the proxies of the control variables (β4–β6) are the following:

- Localisation was proxied by a dichotomous variable equal to (1) if the HCO is in the South of Italy and (0) if not (Pizzi et al., 2021; Nicolò et al., 2022).
- Type was computed by a binary variable equal to (1) if the HCO is an LHA and (0) otherwise.
- Size was measured as the natural logarithm of the number of hospital beds (Andrades-Pena et al., 2020; Arena et al., 2021).
- Age was measured as the natural logarithm of the difference between 2021 and the year of the foundation of each HCO (Shahzad et al., 2019., Tartaglia Polcini et al., 2021).

6. Findings

6.1 Descriptive statistics and correlation analysis

Table 2 shows the results of descriptive statistics for the independent variables, outlining minimum, maximum, and mean values, as well as the standard deviation.

Table 2 – Descriptive statistics

Continuous variables	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
Compensation Mobility Index	-11.180	6.921	0.116	1.213
Training	0	1083321022	7554868.66	88428070.97
Size	102	9415	894.74	987.422
Age	1	94	17.31	16.64
Dummy variables	YES		NO	
	No.	%	No.	%
General Manager	34	23%	116	77%
Chief Executive Officer	59	39%	91	61%
Chief Health Officer	57	38%	93	62%
Localisation	41	27%	109	73%
Type	80	53%	70	47%

Source: author's elaboration

As shown in Table 2, the proportion of women employed in the three governance positions analysed is low. For example, only 23% of general managers, 39% of chief executive officers, and 38% of chief health officers are women. Thus, women are underrepresented in the strategic management of Italian public health companies.

Moreover, while the Size variable varies from a minimum of 102 to a maximum of 9415, presenting an average value of 894.74, the Age has an average of 18.313, with a minimum of 2 and a maximum of 95. Regarding the Localisation and the Type variables, findings indicate that 27% of the HCOs are in the south of Italy, and 53% are LHAs.

Table 3 and Table 4 present the Pearson correlation matrix for the dependent and independent variables. All the correlation values are below the critical threshold of 0.8, indicating no severe multicollinearity problems (Farrar and Glauber, 1967).

Table 3 – Correlation Analysis (Financial performance)

	1	2	3	4	5	6	7	8
Compensation Mobility Index	1	-,001	,147	-,135	-,248**	-,144	-,050	-,030
General Manager		1	,020	,068	,028	-,153	-,106	-,029
Chief Executive Officer			1	-,152	-,013	-,096	-,137	-,049
Chief Health Officer				1	-,011	-,141	-,004	,046
Type					1	-,056	,043	-,176*
Localisation						1	-,174*	,314**
Size							1	-,152
Age								1
*Notes: *p < 0.05; **p < 0.01 (two-tailed)*								

Source: author's elaboration

Table 4 – Correlation Analysis (Non-financial performance)

	1	2	3	4	5	6	7	8
Training	1	-,044	,101	-,064	,077	-,051	-,002	-,104
General Manager		1	,020	,068	,028	-,153	-,106	-,029
Chief Executive Officer			1	-,152	-,013	-,096	-,137	-,049
Chief Health Officer				1	-,011	-,141	-,004	,046
Type					1	-,056	,043	-,176*
Localisation						1	-,174*	,314**
Size							1	-,152
Age								1
*Notes: *p < 0.05; **p < 0.01 (two-tailed)*								

6.2 Regression model

Table 5 shows the results of the first OLS regression model. The regression model assumptions were tested for heteroskedasticity (white test) (Mertens, 2017). The white test provided p-values that were not significant, thus eliminating heteroskedasticity problems.

The regression model is statistically significant (p-value < 0.01) with an adjusted R2 value of 0.08.

Table 5 – Regression Analysis (Financial performance)

	Coefficient	*Std.Error*	*T-statistic*	*p-value*	*Sig*
const	1,31212	0,786784	1,668	0,0976	*
General Manager	−0,0575442	0,116122	−0,4955	0,6210	
Chief Executive Officer	0,236298	0,136938	1,726	0,0866	*
Chief Health Officer	−0,365307	0,251209	−1,454	0,1481	
Type	−0,626336	0,204850	−3,058	0,0027	***
Localisation	−0,483343	0,357474	−1,352	0,1785	
Size	−0,0934718	0,0977292	−0,9564	0,3405	
Age	−0,0259604	0,0860396	−0,3017	0,7633	

Mean dep. variable	0,118655	Std dev. Dep. Variable	1,213428
Sum of squared residuals	191,4635	Regression std error	1,161178
R^2	0,127286	Adjusted R^2	0,084265
F (7, 71)	3,786454	P-value(F)	0,000850

*Notes: The asterisks indicate statistical significance at the following levels: *10%; **5%; ***1%*

White test: T statistic: LM = 34.812; p-value = p(χ2(30) > 34.812) = 0.249539 (no heteroskedasticity)

Source: author's elaboration

The findings show that the Chief Executive Officer is the only variable that statistically (at a 10% level) significantly impacts financial performance. On the other hand, the Chief Health Officer and the General Manager do not affect financial performance. Therefore, our hypothesis is only partially confirmed.

Financial performance is also negatively and statistically correlated with HCOs' type. This result pinpoints that LHAs perform worse economically than other types of HCOs.

Table 6 shows the results of the OLS regression model tested for non-financial performance. The regression model assumptions were tested for heteroskedasticity (white test) (Mertens, 2017). The white test provided p-values that were not significant, thus eliminating heteroskedasticity problems. The regression model is not statistically significant (p-value > 0.05).

According to the results, the variables *General Manager, Chief Executive Officer*, and *Chief Health Officer* do not significantly impact HCOs' non-financial performance. Thus, our second hypothesis has to be rejected.

Table 6 – Regression Analysis (Non-financial performance)

	Coefficient	*Std.Error*	*T-statistic*	*p-value*	*Sig*
const	3,47737e+07	3,97696e+07	0,8744	0,3834	
General Manager	−1,11809e+07	1,16050e+07	−0,9634	0,3370	
Chief Executive Officer	1,56532e+07	1,58652e+07	0,9866	0,3255	
Chief Health Officer	−8,51127e+06	8,85122e+06	−0,9616	0,3379	
Type	1,12650e+07	1,14191e+07	0,9865	0,3256	
Localisation	−6,29814e+06	6,59940e+06	−0,9544	0,3415	
Size	−1,78662e+06	2,98142e+06	−0,5993	0,5500	
Age	−8,19908e+06	8,46599e+06	−0,9685	0,3345	

Mean dep. Variable	7554869	Std dev. Dep. Variable	88428071
Sum of square residuals	1,13e+18	Regression std error	89258764
R^2	0,028990	Adjusted R^2	-0,018876
F(7, 142)	0,145540	P-value(F)	0,994280

*Notes: The asterisks indicate statistical significance at the following levels: *10%; **5%; ***1%*

White test: T statistic: LM = 15.1653; p-value = p(χ2(30) > 15.1653) = 0.988771 (no heteroskedasticity)

7. Discussion

In line with prior literature (Naranjo-Gil et al., 2008; Abor, 2017; Saporito et al., 2019; Buchner et al., 2014; Tartaglia-Polcini et al., 2021; Naciti et al., 2021), the results of our study suggest that greater female involvement in the governance of HCOs' leads to a more remarkable ability to achieve good financial performance.

During COVID-19, the INHS has been governed by an organisational culture that is "mission-driven," guided by a sense of urgency for institutional purposes' achievement, for which new and fast decisional processes are activated (Longo and Ricci, 2020; Vinci et al., 2022).

In the acute stages of the pandemic, the CEO often had to decide very soon and alone in conditions of objective stress and operational overload (Longo and Ricci, 2020; Fissi and Grazzini, 2021). Our empirical results show that women CEOs have shown courage, decision-making power, and substantial foresight in their choices despite uncertain information frameworks in perpetual change (Longo and Ricci, 2020), improving, as a consequence, organisational financial performance.

Additionally, in line with the Resource Dependence Theory, the women on the board have managed the uncertain environment derived from COVID-19 by balancing the primary objective of their community's well-being with the need for adequate financial performance.

Unlike the positive correlation with board gender diversity, financial performance is negatively and statistically correlated with the type variable. This result pinpoints that LHAs perform inferior to other HCOs in economic-financial terms. This result is in line with the studies of Cifalinò and Vendramini (2015), Chang (2006), and Giuffrida et al. (2000).

The negative relation between LHAs and financial performance can be justified by the assumption that in LHAs, there is little use of performance measures (Cifalinò and Vendramini, 2015). This can be explained by the results of Chang (2006), whose study shows that LHA managers perceive the performance indicators chosen by central governments as a top-down control mechanism. Also, in his research, Giuffrida (2000) found LHAs less efficient than other HCOs.

As we can see from the results, LHAs are less attractive and have an inferior compensation mobility index.

Regarding non-financial information, the study shows that women in the positions of General Manager, Chief Executive Officer, and Chief Health Officer do not affect HCOs' non-financial performance.

During the COVID-19 pandemic, managers focused more on financial performance than on other aspects, such as investing in staff training.

8. Conclusions

In recent years, gender diversity has assumed ever greater importance, prompting institutions and policymakers from all over the world to issue regulatory measures and recommendations – both supranational (European Union) and national (see the examples of Norway, Italy, Belgium, and France) – to reduce the glass ceiling that for many years has separated women from both economic and political roles of responsibility.

The debate on the potential of gender diversity has also matured rapidly among academics who have brought to light numerous empirical studies to test the impact of women's presence in governance or the leading positions of managerial responsibility on the financial performance of public and private organisations. However, the attention of the latter has been mainly dedicated to the private company sector, while that of public companies – despite the importance that women can assume in overcoming the resistance to change typical of such companies and favoring the adoption of optics oriented towards an extended performance concept – has been neglected for a long time.

Starting from these premises, the present study has tried to fill this gap, contributing to the existing literature through the empirical analysis of the potential relationship between the presence of women in the governance of a sample of 150 organisations belonging to the Italian public healthcare sector and the financial and non-financial performance, assuming the theoretical perspective of the RDT.

These results highlight how the presence of female CEOs of Italian public HCOs may positively influence their financial performance. In contrast, gender diversity in the corporate governance of Italian public HCOs does not affect their non-financial performance. Thus, considering our results, our analysis supports the expectation that, in the healthcare sector, women's involvement in governance has a positive effect on the HCO's financial performance.

From the point of view of the practical implications, this study follows the same path as policymakers and regulators who have been working for years to promote gender equality at an economic and political level. Our study can be a starting point for implementing measures that focus on the public sector, particularly the health sector, which has been experiencing a severe crisis for years and needs innovative strategies for its relaunch.

Therefore, this study wants to stimulate the sector operators to effectively include women in the leadership positions of the Italian public HCOs, allowing the production of the various effects demonstrated by previous studies.

However, this study is not free from limitations that may represent starting points for future research. First of all, the study was conducted over a single year. Future studies could expand the analysis over several years by verifying - through a longitudinal study - the impact of board gender diversity on the performance of healthcare organisations. Secondly, the analysis is limited to a sample of HCOs belonging to the Italian healthcare sector. Future research could compare European countries while considering the existing differences in the theoretical, social, and economic background. Thirdly, this study uses the compensation mobility index and investment in staff training as a proxy of performance; future studies could use different indicators as a proxy of performance.

References

Abor P.A. (2017), Examining gender diversity on hospital boards in Ghana, *International Journal of Health Governance*, 22(4), pp. 269-282. Doi: 10.1108/IJHG-04-2017-0016.

Andrades-Peña F.J., Larrán M., Muriel M.J., Calzado M.Y., Lechuga Sancho M.P. (2021), Online sustainability disclosure by Spanish hospitals: an institutionalist approach, *International Journal of Public Sector Management,* 34(5), pp. 529-545. Doi: 10.1108/IJPSM-09-2020-0259.

Anessi-Pessina E., Cantù E. (2017), Multiple logics and accounting mutations in the Italian National Health Service., *Accounting Forum*, 41(1), pp. 8-27. Doi: 10.1016/j.accfor.2017.03.001.

Arena C., Catuogno S., Saggese S., Sarto F. (2019), *Gender Diversity in Public Hospitals' TMT: The Impact on Financial and Non-Financial Performance*, in: *ICGR 2019 2nd International Conference on Gender Research,* April, pp. 43-50, 2019, X, XIII, XXII. Reading: Academic Conferences International Limited.

Aversano N., Nicolò G., Ferullo D., Polcini P. T. (2023), The effect of board gender diversity on financial and non-financial performance: evidence from Italian public universities, *Public Money & Management*, 43(7), pp. 679-688.

Aversano N., Ferullo D., Nicolò G., Ardito N. (2024), Performance reporting in the healthcare sector: evidence from Italian healthcare organisations, *International Journal of Productivity and Performance Management*, 73(4), pp. 1117-1136.

Betto F., Sardi A., Garengo P., Sorano E. (2022), The Evolution of Balanced Scorecard in Healthcare: A Systematic Review of Its Design, Implementation, Use, and Review, *International Journal of Environmental Research and Public Health.* 19(16), 10291.

Borgonovi E., Catuogno S. (2021), Diversità di genere, leadership e performance nelle aziende di tutela della salute, *Mecosan*, 120, pp. 3-6. Doi: 10.3280/MESA2021-120001.

Brenna E., Spandonaro F. (2015), Regional incentives and patient cross-border mobility: evidence from the Italian experience, *International Journal of Health Policy and Management*, 4(6), p. 363. Doi: 10.15171/ijhpm.2015.65.

Brennan N. M. (2021), Connecting earnings management to the real world: What happens in the black box of the boardroom?, *The British Accounting Review*, 53(6), 101036. Doi: 10.1016/j.bar.2021.101036.

Büchner V.A., Schreyögg J., Schultz C. (2014), The impact of the board's strategy-setting role on board-management relations and hospital performance, *Health Care Management Review*, 39(4), pp. 305-317. Doi: 10.1097/hmr.0b013e31829fca10.

Capalbo F., Sorrentino M., Smarra M., Ippolito A. (2023), Il ruolo strategico dei Sistemi di Misurazione delle Performance nelle aziende sanitarie: un caso studio, *Management Control,* 1, pp. 119-142. Doi: 10.3280/MACO2023-001006.

Cavicchi C., Vagnoni E. (2017), Does intellectual capital promote the shift of healthcare organisations towards sustainable development? Evidence from Italy, *Journal of Cleaner Production*, 153, pp. 275-286. Doi: 10.1016/j.jclepro.2017.03.175.

Chang L.C. (2006), Managerial responses to externally imposed performance measurement in the NHS: an institutional theory perspective, *Financial accountability & management*, 22(1), pp. 63-85. Doi: 10.1111/j.0267-4424.2006.00393.x.

Cifalinò A., Vendramini E. (2015), La diffusione e l'utilizzo delle misure di performance dei servizi di assistenza primaria nel SSN, *Economia Aziendale Online*, 6(2), pp. 63-77. Doi: 10.6092/2038-5498/6.2.63-77.

Cinelli G., Meda F., Gugiatti A. (2021), La struttura e le attività del SSN, in: *Rapporto OASI* 2021, Milano, Egea, pp. 37-115.

Cinquini L., Nuti S., Boccaccio A., Vainieri M. (2005), Il confronto di performance economico-finanziarie tra aziende sanitarie: l'esperienza della Regione Toscana, *Mecosan*, 14, p. 54.

De Regge M., Eeckloo K. (2020), Balancing hospital governance: A systematic review of 15 years of empirical research, *Social Science & Medicine*, 262, 113252. Doi: 10.1016/j.socscimed.2020.113252.

El Chaarani H., Raimi L. (2022). Diversity, entrepreneurial innovation, and performance of healthcare sector in the COVID-19 pandemic period, *Journal of Public Affairs*, 22, e2808. Doi: 10.1002/pa.2808.

EU Commission (2020), *A Union of Equality: Gender Equality Strategy 2020-2025,* in Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Bruxelles, https://ec.europa.eu/info/policies/justice-and-fundamental-rights/gender-equality/gender-equality-strategy_en.

Farrar D.E., Glauber R.R. (1967), Multicollinearity in regression analysis: the problem revisited, *The Review of Economics and Statistics*, 49(m1), pp. 92-107.

Fissi S., Grazzini F. (2021), L'utilizzo dei Social Media durante la pandemia da COVID-19: un nuovo strumento per la gestione del rischio sanitario?, *Management Control*, suppl. 2, pp. 265-288. Doi: 10.3280/MACO2021-002-S1012.

Fusco A., Galeone G., Schimperna F., Lombardi R. (2021), The impact of Gender diversity on Healthcare System and Leadership: A first SLR for the future research, *Mecosan*, 120, pp. 7-19. Doi: 10.3280/MESA2021-120002.

Gartner J.B., Lemaire C. (2022), Dimensions of performance and related key performance indicators addressed in healthcare organisations: A literature review, *The International Journal of Health Planning and Management*, pp. 1-12.

Gigio L.A., Alampi D., Camussi S., Ciaccio G., Guaitini P., Lozzi M., Mancini A.L., Panicara E., Paolicelli M. (2018), *La sanità in Italia: il difficile equilibrio tra vincoli di bilancio e qualità dei servizi nelle regioni in piano di rientro*, Banca d'Italia.

Giuffrida A., Lapecorella F., Pignataro G. (2000), Organizzazione dell'assistenza ospedaliera: analisi dell'efficienza delle aziende ospedaliere e dei presidi ospedalieri, *Economia Pubblica*, XXX(4).

Gurd, B., Gao, T. (2007), Lives in the balance: an analysis of the balanced scorecard (BSC) in healthcare organisations, *International Journal of Productivity and Performance Management*, 57(1), pp. 6-21.

Hood C. (1995), The New Public Management in the 1980s: variations on a theme, *Accounting, Organizations and Society*, 20(2-3), pp. 93-109. Doi:10.1016/0361-3682(93)E0001-W.

Leung T.Y., Sharma P., Adithipyangkul P., Hosie P. (2020), Gender equity and public health outcomes: The COVID-19 experience, *Journal of Business Research*, 116, pp. 193-198.

Longo F., Ricci A. (2020), Le fratture generate dal Covid-19: quali priorità strategiche per la sanità italiana?, in: *Rapporto OASI 2020*, Milano, Egea, pp. 3-34.

Lu J., Herremans I.M. (2019), Board gender diversity and environmental performance: An industries perspective, *Business Strategy and the Environment*, 28(7), pp. 1449-1464. Doi: 10.1002/bse.2326.

Manes-Rossi F., Bisogno M., Aversano N., Citro F. (2020), Intellectual capital in Italian healthcare: senior managers' perspectives, *International Journal of Public Sector Management,* 33(6/7), pp. 629-646. Doi: 10.1108/IJPSM-11-2019-0298.

Martínez-Córdoba P.J., Benito B., García-Sánchez I.M. (2021), Efficiency in the governance of the Covid-19 pandemic: political and territorial factors, *Globalization and health,* 17, pp. 1-13.
Mertens W. (2017), *Quantitative Data Analysis*, Springer International Publishing.
Naciti V., Noto G., Vermiglio C. (2021), Diversità di genere e performance organizzativa: un'analisi empirica nel settore sanitario, *Mecosan*, 120, pp. 45-61. Doi: 10.3280/MESA2021-120004.
Naranjo-Gil D., Hartmann F., Maas V.S. (2008), Top management team heterogeneity, strategic change, and operational performance, *British Journal of Management*, 19(3), pp. 222-234, Doi: 10.1111/j.1467-8551.2007.00545.x.
Nicolò G., Ferullo D., Aversano N., Ardito N. (2023), Intellectual capital disclosure and its determinants in healthcare organisations–Evidence from Italy, *International Journal of Public Sector Management*, 36(1), pp. 20-45.
Nuti S., Seghieri C., Vainieri M. (2013), Assessing the effectiveness of a performance evaluation system in the public health care sector: some novel evidence from the Tuscany region experience, *Journal of Management & Governance*, 17(1), pp. 59-69. Doi: 10.1007/s10997-012-9218-5.
Paoloni P., Dal Mas F., Barcellini A., Orlandi E. (2021), Leadership femminile in sanità: possibili soluzioni e strumenti: un caso di studio, *Mecosan*, 120, pp. 83-104. Doi: 10.3280/MESA2021-120006.
Pavan A., Paglietti P., Reginato E., Fadda I. (2019), Corruzione e performance nei sistemi sanitari regionali italiani, *Management Control*, 3, pp. 123-146. Doi: 10.3280/MACO2019-003007.
Pfeffer J., Salancik G.R. (2003), *The external control of organisations: A resource dependence perspective*, Stanford University Press.
Pizzi S., Caputo F., Venturelli A. (2021), Accounting to ensure healthy lives: a critical perspective from the Italian National Healthcare System, *Corporate Governance*, 20(3), pp. 445-460.
Porcu R. (2007), Servizi sanitari, popolazione e mobilità sanitaria della Sardegna: un’analisi multiway, *Difesa Sociale. Bisogni socio-sanitari, servizi e territorio*, 3, pp. 57-74.
Posteraro N. (2018), La compensazione ei rimborsi nella mobilità sanitaria interregionale e transfrontaliera, *Il Diritto Dell'economia*, 97(3), pp. 851-880.
Purbey S., Mukherjee K., Bhar C. (2007), Performance measurement system for healthcare processes, *International Journal of Productivity and Performance Management*, 56(3) pp. 241-251. Doi: 10.1108/17410400710731446.
Rainero C., Brescia V., Cataldo A. (2019), La formazione manageriale in sanità. Nuovi strumenti e modelli tra governance e politiche, *Economia Aziendale Online*, 10(2), pp. 235-256. Doi: 10.13132/2038-5498/10.2.1936.
Reguera-Alvarado N., De Fuentes P., Laffarga J. (2017), Does board gender diversity influence financial performance? Evidence from Spain, *Journal of Business Ethics*, 141(2), pp. 337-350. Doi:10.1007/s10551-015-2735-9.
Saporito R., Sartirana M., Tozzi V. (2019), La femminilizzazione dei ruoli apicali in sanità: dimensioni del fenomeno, cause e prospettive, in: *Rapporto Oasi 2019*, Milano, Egea, pp. 613-619.
Sicoli G., Rija M. (2021), Diversità di genere e sistema sanitario: un’analisi su un campione di aziende sanitarie italiane, *Mecosan*, 120, pp. 63-81. Doi: 10.3280/MESA2021-120005.
Tartaglia Polcini P., Aversano N., Nicolò G., Ardito N. (2021), La diversità di genere nella direzione strategica delle aziende sanitarie: il rapporto tra governance e performance nelle aziende ospedaliere italiane, *Mecosan*, 120, pp. 21-43. Doi: 10.3280/mesa2021-120003.

UN (2015), *Transforming our world: the 2030 agenda for sustainable development. United Nations General Assembly. New York,* www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E.
UNDP (2020), *Global Human Development Indicators, United Nations Development Programme Human Development Reports*, New York, USA.
Uyar A., Kilic M., Koseoglu M.A., Kuzey C., Karaman A.S. (2020), The link among board characteristics, corporate social responsibility performance, and financial performance: Evidence from the hospitality and tourism industry, *Tourism Management Perspectives*, 35, 100714. Doi: 10.1016/j.tmp.2020.100714.
Voelker K. E., Rakich J. S., French G. R. (2001), The balanced scorecard in healthcare organisations: a performance measurement and strategic planning methodology, *Hospital topics*, 79(3), pp. 13-24.
Van Daalen K.R., Bajnoczki C., Chowdhury M., Dada S., Khorsand P., Socha A., Lal A., Jung L., Alqodmani L., Torres I., Ouedraogo S., Mahmud A.J., Dhatt R., Phelan A., Rajan D. (2020), Symptoms of a broken system: the gender gaps in COVID-19 decision-making, *BMJ global health*, 5(10), e003549
Villa A. (2011), Federalismo regionale: costi e fabbisogni standard nel settore sanitario, *Giornale diritto Amministrativo*, 938.
Vinci S., D'Amico E., Biscotti A. M. (2022), I sistemi di management control nella sanità pubblica italiana: dalle strutture verticali ai processi orizzontali, *Management Control*, 1, pp. 103-119. Doi: 10.3280/MACO2022-001007.
Vrontis D., El Chaarani H., El Abiad Z., El Nemar S., Yassine Haddad A. (2022), Managerial innovative capabilities, competitive advantage and performance of healthcare sector during Covid-19 pandemic period, *Foresight*, 24(3/4), pp. 504-526.

MANAGEMENT CONTROL

EDITORIAL GUIDELINES

1. Submission

Articles must be submitted to the following link: https://journals.francoangeli.it/index.php/maco/about/submissions
using the "Article RivistaMC.doc" format (other formats will not be accepted):
http://www.sidrea.it/wp-content/uploads/2023/01/Article-RivistaMC.docx
The article should be no longer than 24 pages, including abstract, notes, charts, tables, and references (for a maximum of 50.000 characters).
The article must be accompanied by a letter of release in which the corresponding author grants to the Editorial Board of the journal the exclusive exploitation rights on the article.

2. Author(s) Identity

To ensure anonymous review, the names of the authors should be submitted as a separate file or inserted in the body of the submission e-mail, indicating both the home institutions and e-mail addresses.

3. Abstract

A concise and factual abstract is required (minimum 1.200 characters, maximum 1.600 characters, including spaces). Abstract should be written in American English, in 10-point Times New Roman font, and with single spacing. The abstract should clearly state the theoretical approach, method and data, results and findings, and implications for the theory.

4. Keywords

The keywords should be a minimum of 4 and maximum of 6. The first three should indicate research themes, the remaining three could expand on the theory, method or specify the dataset or context.
Keywords should be written in American English at the end of the abstract in 10-point Times New Roman font, with single spacing.

5. General format

Page setup:

- Top margin: 5.5 cm, bottom: 6.2 cm, left: 4.6 cm, right: 4.6 cm; header: 4.3 cm, footer: 5.3 cm
- Spacing: single
- In the "Layout" tab click "different odd and even" and "different first page"
- Spell out the entire document

Language: Articles can be written both Italian or American English. English-written manuscripts should be edited and proofread prior to final submission. The proofreading of the manuscript is especially required for authors whose native language is not English.

Title of the article: The title of the article can be written both Italian or American English, in 16-point Times New Roman font, centred, and with bold. When the article is written in Italian, an American English title must be provided.

Title of sections: First and second-level sections should be in 11-point Times New Roman font, with bold, 2 white line-spacing above and 1 below, numbered consecutively. Third-level sections should be in 11-point Times New Roman and italics font, 1 white line-spacing above and no line-spacing below and no numbers.

Body of the article: 11-point Times New Roman font, justified, with single spacing and indentation of the first line 0.5 cm - activating the control of isolated lines.

Figures, tables, and charts: The figures, tables, and charts must be placed within the text of the manuscript to ease reader comprehension. Additional tables or figures can be placed in appendix. All tables and figures should have appropriate titles, and everything should be properly labelled. The captions should be set in 10-point Times New Roman and italics font.

Quotes from interviewees: When interviews are included in the article, they must be placed in quotation marks, in 10-point Times New Roman and italics font, justified, with single spacing, 1 white line-spacing above and below.

Notes (footer): 9-point Times New Roman font, with a first-line indent of 0.5 cm, numbered consecutively from footnote n. 1.

Bullet and numbering: indent 0.5 cm.

Captions: 9-point Times New Roman font, on the right-hand pages (odd), and must bear the title of the article or section title, right-aligned, possibly shortening the title.

Footer: Footer should contain the page number, it should be written in 11-point Times New Roman font, centred, with no return, no frame, at 0.8 cm from the foot of the last row.

Citations: Citations should be limited to the works actually used (quoting the page or pages of specific reference) and to the classical works of general reference, avoiding generic citations. Citations should be enclosed between parentheses and the author's last name should be followed by a comma, year of publication and the page or pages (Giannessi, 1960, p. 56). If the authors are two, they must be both written and connected by "and". In the case of three or more authors, use the first name followed by et al. in italics (Anthony *et al.*, 1979).

Multiple citations: Multiple citations can be used only when it is strictly necessary to highlight an evolution of thought about a specific topic. In this case references must be chronologically ordered, starting from the oldest reference and they must be separated by a semicolon (e.g.: Cinquini and Nørreklit, 2015; Nørreklit, 2017).

Footer citations: Please use footer citations to reduce the multiple citations inserted in the body of the article and to explain the individual contributions of the authors. Footnote citations should always be used when the thought of the cited authors is not aligned with the thought expressed in the article.

6. References

Every article must include a "References" section that contains only those works cited within the text. Each entry should contain all information necessary for the unambiguous identification of the published work. This journal supports the Force 11 Data Citation Principles and requires that all publicly available datasets be fully referenced in the reference list with an accession number or unique identifier such as a digital object identifier (DOI). The reference list must be in 9-point Times New Roman font, with single spacing and hanging indent of 0.5 cm. Designate two or more works by one author (or by an identical group of authors) published in the same year by adding "a," "b," and so forth, after the year.

Use the following formats:

1. Arrange citations in alphabetical order according to the family name of the first author or the name of the institution or body responsible for the published work.
2. Use initials of the first names instead of proper names.
3. For two or more authors, separate authors with a comma (Kaplan R.S., Norton D.P.).
4. Date of publication follows the author(s).
5. Titles of journals or newspapers are not to be abbreviated.
6. For resource materials that were only available online and are now no longer available, please include a "last accessed" date as a parenthetical note appended to the end of the URL.

Examples

Bertini U. (1990), *Il sistema d'azienda. Schema di analisi*, Torino, Giappichelli.

Castellano N., Presti C., Del Gobbo R. (2017), *Employing Big Data & Analytics in Decision-Making: Factors Affecting Managers' Trustworthiness*, In Dameri R.P., Spinelli R. (eds), *The European Conference on Information Systems Management*, pp. 37-46, Academic Conferences International Limited.

Lombardi R. (2021), Le dimensioni della conoscenza aziendale. Profili di investigazione tra crisi pandemica ed economia digitale, *Management Control*, 3, pp. 5-14. Doi: 10.3280/MACO2021-003001.

Tessier S., Otley D. (2012), A conceptual development of Simons' Levers of Control framework, *Management accounting research*, 23(3), pp.171-185. Doi: 10.1016/j.mar.2012.04.003.

7. Peer review process

The journal operates a double anonymized review process. All contributions will be initially assessed by the editor for suitability for the journal. Papers deemed suitable are then sent to two independent expert reviewers to assess the scientific quality of the paper. In case of discrepancy between the two evaluations a third referee is involved in the peer review process. The Editor is responsible for the final decision regarding acceptance or rejection of articles. The Editor's decision is final.

8. Changes to authorship

Authors are expected to consider carefully the list and order of authors before submitting their article and provide the definitive list of authors at the time of the original submission. Any addition, deletion or rearrangement of author names in the authorship list should be made only before the article has been accepted and only in exceptional circumstances. Such a change must be approved by the journal Editor, who evaluates the reason for the change in author list.

9. Invited papers

Invited papers and editorials are published upon the invitation of the Editorial Board of the journal.