

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

*Edoardo Borlatto**, *Elisa Truanti**, *Elisa Giacosa**
*Luca Maria Manzi**

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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.

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; Vegteret *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 co-existence 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.

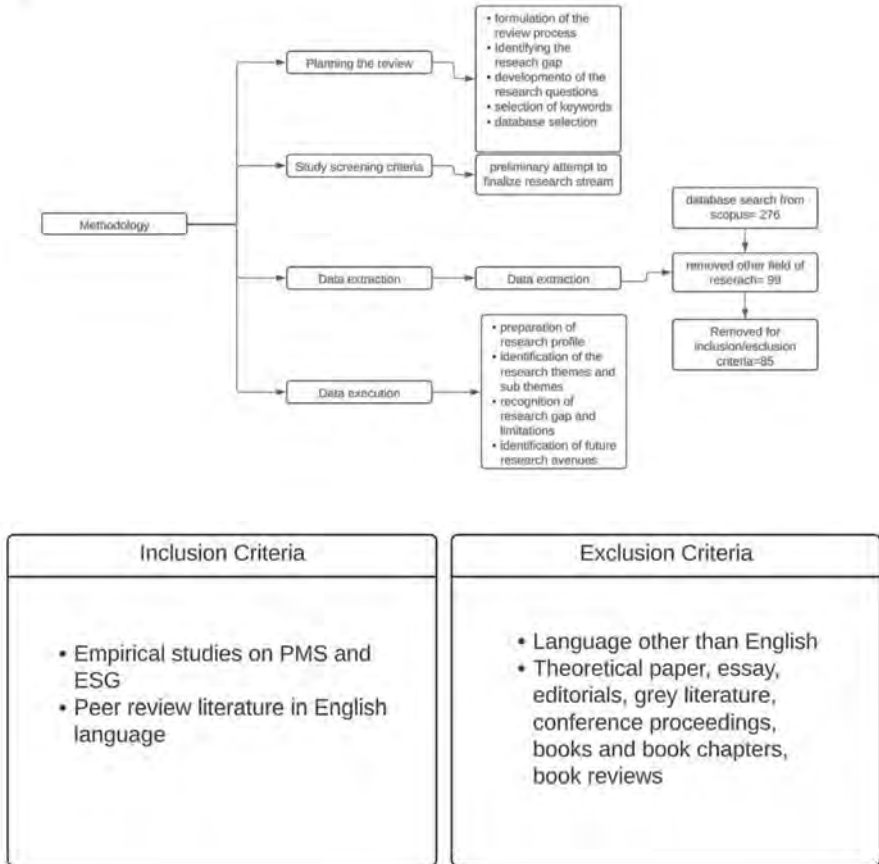
3. Research methodology

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

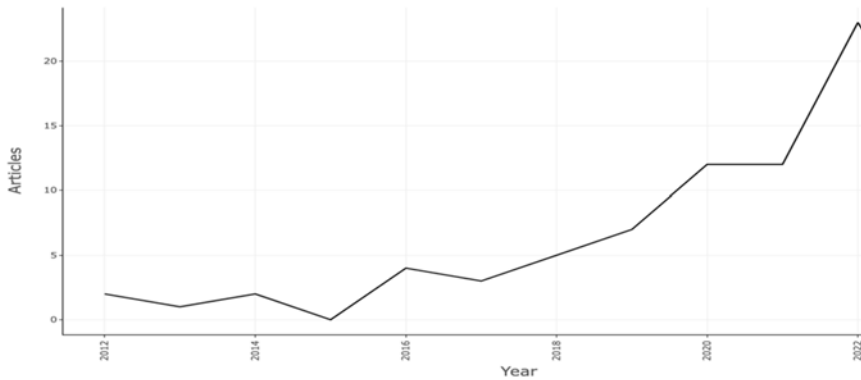


Figure 2 shows a very low production until the year 2017, followed by a significant increase culminating in the production of 22 items in the year 2022. We attribute the recent increase in production to the greater attention given to ESG following the COVID-19 pandemic and the introduction of new regulations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

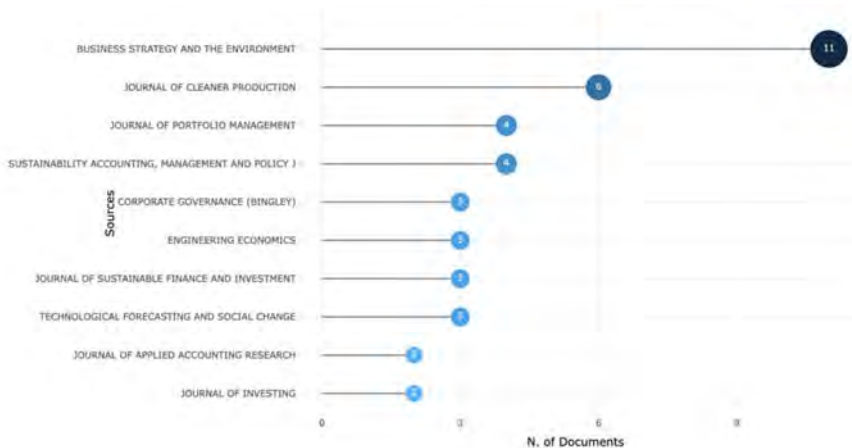


Figure 3 - Yearly scientific Production

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

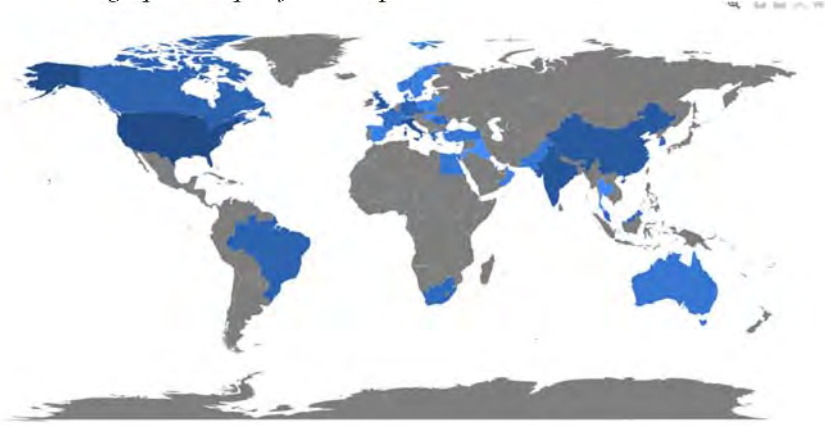


Figure 4 offers an overview of the geographical dispersion of the sample. When interpreting the results, it is important to consider how the English filter we applied in the sample selection process might have skewed the results towards English-speaking countries. It is also worth noting how countries 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

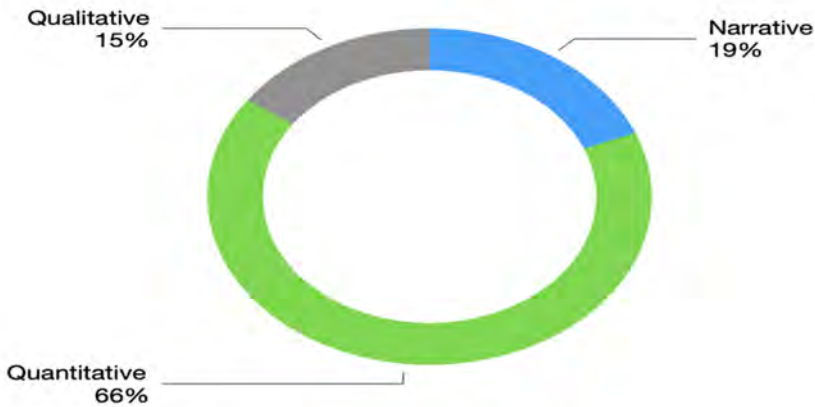


Figure 5 provides a visual representation of the distribution of research methodologies utilized within the sample. It is significant to note that over half of the research conducted in the sample was rooted in quantitative methods, while qualitative research accounted for 15% of the articles. Moreover, 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

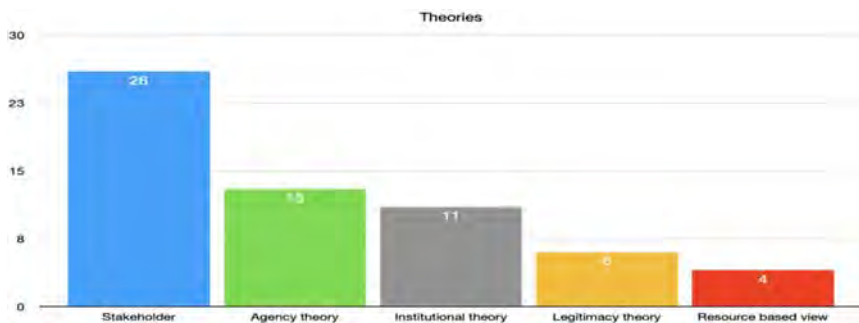


Figure 6 features the distribution of theoretical underpinning found in the sample. A conspicuous prevalence of the stakeholder theory was observed, particularly in articles focused on demonstrating the effect that performance measurement of ESG have on companies' performance. Other theoretical frameworks 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.

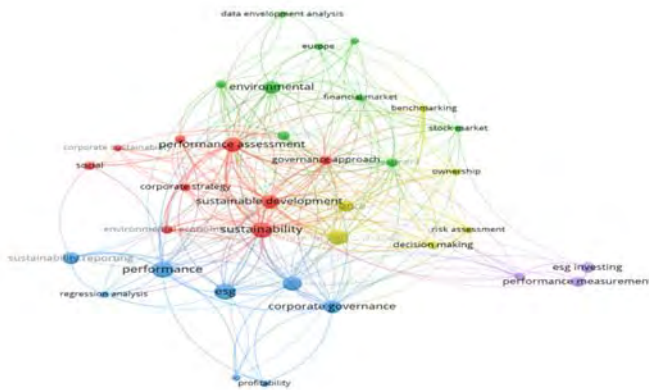
The prominence of sustainability as a central theme within the PMS literature can be partially attributed to the increasing recognition of the significance of ESG factors. To gain a more comprehensive understanding of the evolution of this literature over time, the authors harnessed the capabilities 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 & Martínez Sedano, 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 (Ghehardt *et al.*, 2022). For instance, Ghehardt *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.

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