

# GENDER DIVERSITY AND FINANCIAL AND ENVIRONMENTAL PERFORMANCE IN SMES: A SYSTEMATIC LITERATURE REVIEW

Simona Ranaldo<sup>\*</sup>, Grazia Dicuonzo<sup>\*\*</sup>, Francesca Donofrio<sup>\*\*</sup>

<sup>\*</sup> Corresponding author, University of Bari Aldo Moro, Bari, Italy

Contact details: University of Bari Aldo Moro, Largo Abbazia Santa Scolastica, n. 53, 70124 Bari, Italy

<sup>\*\*</sup> University of Bari Aldo Moro, Bari, Italy



## Abstract

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Small and medium-sized enterprises (SMEs) represent the most widespread business model so their environmental impact cannot be overlooked. The topic of sustainability in SMEs, current and well-debated in literature, has been investigated from different perspectives. Some studies have looked at the benefits and barriers related to the adoption of sustainable production policies, others the relationship with corporate performance, and still others the drivers of sustainability. The latter studies find founders/chief executive officer's (CEO) proactivity and sensitivity to environmental issues as important drivers of the business sustainable development process. However, limited are the studies that analyze the role and potential of the whole board of directors on SMEs' not only financial but also sustainable performance. This study provides a systematic literature review (SLR) to understand the main strands of research that investigated the relationship between board diversity and financial and sustainable performance. The results show that several studies have found a relationship between board diversity and financial performance, while there are still limited studies that analyze the relationship between board diversity and sustainable performance. This study not only provides a valuable knowledge base for the academic community on what has been addressed on the topic to date but also provides important new research directions, stimulating scientific contributions that analyze diversity on Boards in its several forms (ethnicity, gender, age, culture, religion) to understand which of these most stimulates SME sustainability.

**Keywords:** SMEs, Board Diversity, Sustainability, Firm's Performances, Systematic Literature Review

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## 1. INTRODUCTION

For the last two decades, academics have been growing interest in sustainable development issues,

with a focus on small and medium-sized enterprises (SMEs), which are the most widespread business (Malesios et al., 2018; Prashar & Vijaya Sunder, 2020). SMEs are responsible for a significant

percentage of global pollution (about 70 percent), as a result, they must engage in “sustainable business practices” (Caldera et al., 2018; Jabbour et al., 2020).

The concept of corporate social responsibility (CSR), as defined by the European Commission, prompts companies to integrate social and environmental issues into their activities (Commission of the European Communities, 2001).

Among the corporate actors promoting the adoption of sustainable production practices, a central role is played by top management, which must be particularly aware of environmental issues by investing in the sustainability of its companies (Irimiás & Mitev, 2020; Pereira et al., 2020; Toke & Kalpande, 2018; Yacob et al., 2019). Several studies have found that entrepreneurial orientation (EO) and a sustainability-oriented strategic vision are important drivers in developing corporate social responsibility (Cantele & Zardini, 2020; Yuen & Lim, 2016).

Research on the topic has mainly focused on the relationship between the chief executive officer (CEO) or founder culture of the company and corporate sustainability. In contrast, the topic of board diversity in promoting corporate sustainability is still underdeveloped; instead, the literature highlighting the correlation between diversity and financial performance is more extensive.

However, research on the topic, mostly qualitative, has only looked at the relationship between CEO or founder culture and corporate sustainability. In contrast, the topic of board diversity in promoting corporate sustainability is still underdeveloped; instead, more extensive literature highlights the relationship between board gender diversity and firm performance (Salloum et al., 2017; Shehata et al., 2017).

Diversity understood not only in terms of gender and age, but also in terms of nationality, religion, and culture, is still an under-explored area of research as is the relationship between diversity, financial performance, and sustainable development.

In fact, the prevalence of studies addressing the issue of sustainability in SMEs concerns the analysis of advantages and barriers related to the adoption of sustainable production policies and the relationship between sustainability and performance (Al Asbahi et al., 2020; Meath et al., 2016; Raza et al., 2019).

In light of these theoretical premises, through a systematic literature review (SLR) about the relationship between board diversity and financial and environmental performance in SMEs, the study aims to provide evidence of what has been developed to date on the topic in order to highlight the future research lines on the topic. In particular, we want to answer the following research question:

*RQ1: What are the main issues that animate the scientific debate on the influence of gender diversity in the Board on financial and environmental performance in SMEs?*

The results show that research on the topic has developed around three main research strands. The first strand of research investigates the gender diversity of the board of directors only with reference to the responsibility for corporate strategic choices: the top management; the second strand of research explores the influence of whole board gender diversity on environmental and financial performance; the third strand analyzes

organizational internal and external barriers that influence the board’s sustainability strategies and, subsequently, environmental, and financial performance. In addition, this strand studies the advantages linked to sustainability.

This study provides a valuable knowledge base for the academic community on what has been addressed on the topic to date, encouraging exploration of less developed topics and offering insights for future research directions. In addition, given the importance of sustainability as a highly topical issue, this study helps to understand what form of diversity within the board of directors better supports the development of sustainable corporate policy.

The paper is structured as follows. Section 2 presents a description of the research methodology adopted is provided. Section 3 describes the results of SLR. Section 4 presents the discussions and finally Section 5 provides the conclusions and limitations of the work, along with future research lines directions.

## 2. THEORETICAL BACKGROUND

To identify the main issues that animate the debate on gender diversity in the composition of the board as a tool to improve economic, financial, and environmental performance in SMEs, we conduct a systematic literature review based on Mostaghel’s (2016) approaches. This analysis differs from that of the narrative type precisely because of its systematicity, being an objective analysis and replicable, just as happens for empirical research.

The SLR approach makes it possible to define future research lines based on a careful analysis of the previously existing literature (Kraus et al., 2017). This methodology is characterized by its replicability, providing for the necessary consequentiality of the following steps: 1) planning the review; 2) identifying and evaluating articles; 3) extracting and synthesizing data; 4) disseminating the review results.

### 2.1. Planning the review

Our SLR which analyzes the relationship between the board of directors and sustainability in SMEs is aimed at providing a picture of what has been developed so far in the literature, in order to highlight the possible evolution of studies on the subject.

To ensure a transparent and high-quality process, our research team created a review protocol and searched for cases where the terms “board of directors”, “diversity”, “SME”, “performance”, “CSR”, and “sustainability” appeared simultaneously in the title, abstract, or keywords of an article.

The literature review covers seven years (2013–2020 period) and was performed using The Web of Science (WoS) database (Velte, 2017, 2020). This database was chosen because of its general acceptance and its high level of prestige in the academic world. The research period began in 2013, the year in which Directive 2013/34/EU on the disclosure of non-financial and diversity information by certain undertakings and large groups was enacted. On October 22, 2014, the European Parliament adopted Directive 2014/695/EU on the disclosure of non-financial information, amending Directive 2013/34/EU. This

Directive was implemented by EU Member States on December 6, 2016 and by public interest entity (PIEs) as of January 1, 2017. This is a step forward in the development of sustainability and corporate social responsibility reporting as for the first time the disclosure of non-financial information is standardized and becomes a regulatory requirement for companies within the EU (2014/95/EU). The new EU Directive will also affect the reporting of companies that do not fall under the scope of the directive as SMEs (Klaus et al., 2016).

Following the application of the chosen methodology for research on the WoS database, the articles were selected through the use of the keywords “board of directors” in combination with the expressions “diversity”, “SME”, “performance”, “ESG” (environmental, social, and governance) and “sustainability”.

The selected keywords were combined into seven possible combinations. The search initially produced 232 publications. Elimination of duplications and analysis of the abstracts of these articles allowed us to exclude some of the identified papers, those that were repeated, and those that made only negligible reference to the search criteria. At the end of this evaluation process, 109 articles were included in our analysis (see Table 1).

**2.2. Identifying and evaluating articles**

The research team examined the titles, keywords, and abstracts of the selected articles, consistent with the research objective. All information has been organized in an MS Excel database. Next, we excluded articles that were not relevant to our study.

The articles thus selected were analyzed entirely by all the members of the research team, in order to guarantee the reliability of the results.

From the researchers’ joint analysis, a total of 109 research papers were included as correct sources for SLR.

**2.3. Extracting and synthesizing data**

To perform the data extraction, we created a search list within the WoS database that includes the above 109 research articles. We then generated a plain text file (comma delimited values) in MS Excel format to be used in the next step.

**2.4. Disseminating the review results**

Our SLR is the first to trace the connections between the board of directors and sustainability in SMEs; as such, it provides valuable and cutting-edge information (Kraus et al., 2017) that advances studies on the topic under investigation.

**3. RESULTS REVIEW**

**3.1. Analysis of the temporal evolution of research and journals**

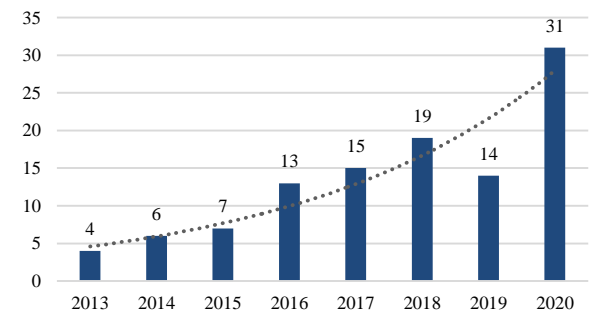
In order to understand the relevance of the research topic addressed and to confirm the relevance that research gives to the relationship between gender diversity on the board and financial and environmental performance in SMEs, the first analysis looked at the time evolution of the articles published on the topic (Figure 1).

It is clear that in the first phase of the period considered, the number of publications on the topic

was low. In 2013, we identified four publications; the number of publications on the topic has been increasing over the period examined, with the exception of 2019, when the number of publications and their frequency decreased again. The peak is reached in 2020 (31 papers), indicating the importance of the topic at the academic level. The growth in the number of articles could also undoubtedly be related to the increased scientific and academic research in recent years, showing a positive trend despite the variations in the number of publications over the period. We did not consider 2021 as the papers focused more on the effects of the COVID-19 pandemic on performance than on gender diversity.

Next, we counted the number of papers published and the journals that published these articles in the period between 2013 and 2020 (Appendix). If we analyze the journals in which these articles were published, it is worth noting that their number is relatively small. Of the 316 journals found in the “business” and “management” categories on the WoS database, only 43 published research related to the impact of board gender diversity on financial and environmental performance in SMEs. The most relevant journals are *Sustainability* and *Journal of Cleaner Production* (see Figure 2).

**Figure 1.** Time development of the topic



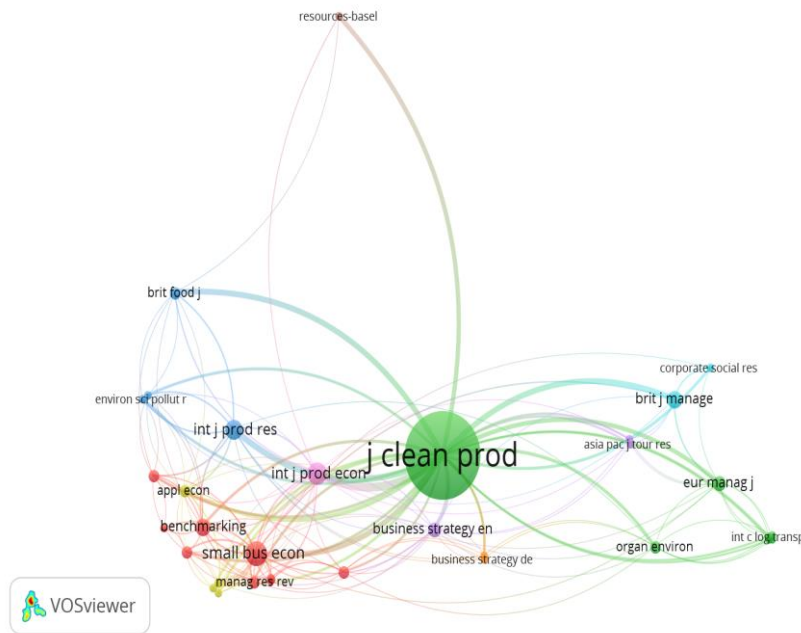
Source: Authors’ elaboration.

We have undertaken the analysis of occurrences by identifying the most relevant author keywords among the 109 research articles. Table 1 presents these keywords, each of which has a minimum of two occurrences. “Sustainability”, “SMEs”, “medium-sized enterprises” and “performance” are important keywords that frequently arise when investigating and responding to our research question. We studied the co-occurrence of all keywords, choosing 2 as the minimum number of occurrences; 9 keywords have reached this threshold. We have adopted the full count method in light of our guarantee of document influence and without weighing the authors. Figure 3 shows the results.

**Table 1.** Author’s keywords occurrence

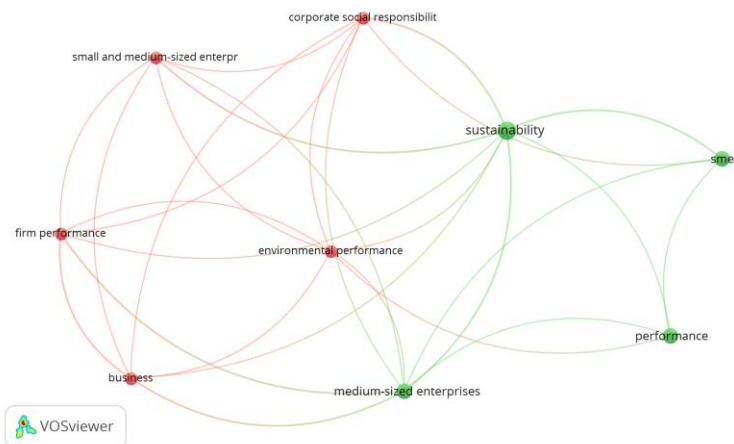
Keyword	Occurrences
Business	2
Corporate social responsibility	2
Environmental performance	2
Firm performance	2
Medium-sized enterprises	3
Performance	3
Small and medium-sized enterprises	2
SME	3
Sustainability	4

Figure 2. Co-citation cited sources



Source: Authors' elaboration with VOSviewer.

Figure 3. All keywords occurrence



Source: Authors' elaboration with VOSviewer.

### 3.2. State of art on the relationship between board gender diversity and financial and environmental performance in SMEs

The analysis of the selected papers makes it possible to identify the aspects investigated in the literature to explain the relationship between board diversity and financial and environmental performance in SMEs, what results have been achieved, and which aspects of this relationship are still being explored.

Three distinct strands of research emerged from the analysis:

1) The first strand of research focuses not on the role of the entire board of directors, but on the influence of the top management — considered responsible for corporate strategic choices — on financial and environmental performance in SMEs.

2) The second strand of research, meanwhile, focuses on the entire board of directors, analyzing the role of diversity as a driver of sustainability and value creation.

3) The last strand of research analyzes the main drivers and obstacles — both internal and external to the organization — that influence top management and, in general, the board of directors with regard to the implementation of sustainable development strategies.

#### 3.2.1. The entrepreneurial orientation of top management toward sustainability

Among the tools available to companies for incorporating environmental sustainability into their processes is life cycle management (LCM),

an approach that enables the measurement and management of environmental impacts (Eweje, 2020; Seidel-Sterzik et al., 2018; Shahedul Quader et al., 2016) and whose application is generally influenced by the company manager as well as environmental culture and resource availability (Krechovská & Procházková, 2014; Seidel-Sterzik et al., 2018). In addition, the sustainability balance scorecard (S-BSC) measures corporate sustainability by assessing financial and non-financial aspects (Malesios et al., 2018; Tsalis et al., 2013). It has been confirmed that there are significant and positive relationships between the social responsiveness of companies and profitability. Improving the management and performance of sustainability for a company is an opportunity for its development and growth rather than a threat (Cantele & Zardini, 2018; López-Pérez et al., 2018). Unlike large companies, it may be more difficult for SMEs to achieve sustainable enterprises, as resource constraints are a common feature of most of them. Therefore, SMEs should make effective use of their limited resources and prioritize their performance factors in terms of a balanced scorecard (BSC) approach when designing their sustainability development (Barbosa et al., 2020; Hsu et al., 2017).

Several studies have attempted to investigate the critical success factors for implementing green strategies. Among these, a central role is played by top management, who must show a proactive attitude toward solving environmental issues by investing in the sustainability of their company (Irimiás & Mitev, 2020; Jahanshahi & Brem, 2017; Pereira et al., 2020; Toke & Kalpande, 2018; Yacob et al., 2019). Specifically, the motivations for adopting social responsibility initiatives include the sensitivity and culture of the company's owners or managers (Das et al., 2019; Ghazilla et al., 2015; Hosseininia & Ramezani, 2016; Massoud et al., 2019; Suriyankietkaew & Avery, 2016) and, more generally, awareness and knowledge of the importance of sustainability (Bakos et al., 2020; Belas et al., 2020), as well as managers' knowledge of their responsibilities regarding environmental regulation (Nikolaou et al., 2013).

In general, managers are responsible for defining business strategy and must have skills that can stimulate innovation (Hadj, 2020) and sustainability (Nor-Aishah et al., 2020) of the business, allowing constant adaptation to the constant changes imposed by the market (Faeni et al., 2019; Ramón-Jerónimo & Herrero, 2017). Some studies suggest, in this regard, that it is precisely market uncertainty that stimulates entrepreneurship, which in turn is functional for managing sustainability (Liu et al., 2020). Thus, the capacity for organisational learning, understood in terms of the organization's ability to process knowledge and modify its behavior to reflect the new cognitive situation, also promotes corporate sustainability (Yusoff et al., 2019). To this end, certainly important is the promotion of specific training on CSR at all company levels (López-Pérez et al., 2018).

Thus, entrepreneurial orientation also plays a relevant role in the process of seeking new market opportunities, innovation, and strengthening competitive advantage, fostering faster business growth (Jansson et al., 2015; Zhai et al., 2018).

The absence of an adequate sustainability-oriented strategic vision, on the contrary, is a significant obstacle to the development of corporate social responsibility (Yuen & Lim, 2016).

In fact, studies have found that CEOs with a strong CSR orientation, by integrating CSR assumptions into corporate strategy, are more likely to influence their companies to achieve sustainable business performance (Kraus et al., 2017; Park et al., 2017). When the CEO makes decisions aimed at strengthening the sustainable growth of the company, this is referred to as cognitive-style CEO (Sarfraz et al., 2020). Thus, entrepreneurship is an important driver of sustainable economic development (Eniola, 2020).

### *3.2.2. The influence of board diversity on sustainability*

As is well known, boards of directors are the governing bodies that guide corporate decision-making, although the roles and characteristics of their members vary according to the culture of each country (Mohamed Adnan et al., 2018).

The board of directors has many functions, including monitoring and supervising directors, providing information and advice, monitoring compliance with applicable laws and regulations, providing links to the external environment, and appointing the chief executive. According to some scholars, women directors can have an important influence on the style and working processes of the board and, consequently, on firm performance (García-Solarte et al., 2018; Martín-Ugedo & Minguez-Vera, 2014). So, diversity is important for the creation of corporate value (Huse et al., 2009; Paoloni et al., 2017) and the economic and social development of SMEs (Esteban-Salvador & Gargallo-Castel, 2019). Gender diversity is an important force in achieving sustainable development. Furthermore, sustainable development must include the promotion of women's empowerment and gender equality (Han et al., 2019). Board diversity in SMEs, for example with regard to gender, age, and ethnicity, is often analyzed in terms of its impact on business performance (Dang et al., 2018; Salloum et al., 2017; Shehata et al., 2017; Wu et al., 2017). According to some authors, young people and women make a significant contribution to sustainable business development, and the business conditions that foster growth in this direction are finance, government policy and program, entrepreneurship education, research and development, business and physical infrastructure, entry regulation, culture and standards (Karoui et al., 2017; Orobía et al., 2020). Other studies, with reference to sustainable performance, have found better results in male-led firms in more developed markets; on the contrary, no difference between men and women has emerged in firms operating in emerging markets (Butkouskaya et al., 2020). Gender diversity and, in the case of family businesses, family involvement on the Board, are recognized as drivers for the exploitation of new business ventures (Arzubiaga et al., 2018). According to some scholars, however, the likelihood of women's presence on the board increases with corporate performance, defined as return on assets, and family ownership, but decreases with corporate ownership and

corporate risk. They also find a positive effect of women's presence on boards on company performance (Martín-Ugedo & Minguez-Vera, 2014).

Previous studies on the relationship between gender diversity understood as the share of women in management positions, and sustainability has produced mixed results. Some studies have found no relationship between gender diversity and sustainability (Cucari et al., 2017; Galbreath & Shum, 2012), while others have found that diversity and sustainability are positively associated (Birindelli et al., 2018; Kassinis et al., 2016). With specific reference to SMEs, it is believed that they can improve their sustainability if they have a gender-balanced management team (Graafland, 2020).

Another strand of research investigates the importance of corporate social responsibility and diversity in relation to business innovation. This link is uncertain, especially among small and medium-sized enterprises. Diversity emerges as a partial mediator of the relationship between CSR and technological innovation in SMEs. Therefore, strategic CSR can help SMEs to achieve positive returns on product or process innovation (Bocquet et al., 2019). Some authors show that sustainability-oriented innovation practices directly and indirectly (through quality performance, innovation performance, environmental performance, and social performance) also influence economic performance (Dey et al., 2019a; Isensee et al., 2020; Maletić et al., 2014).

### 3.2.3. Sustainability drivers and barriers

Drivers of sustainability include legislation, economic incentives, ethical motives, innovation (Pusnik et al., 2014), and the attention of stakeholders (Isensee et al., 2020; Klovienė & Speziale, 2015; Raza et al., 2019; Rubio-Andrés et al., 2019) and employees (Baggia et al., 2019; Kucharska & Kowalczyk, 2018), all of which have favored the adoption of sustainable business strategies (Hoogendoorn et al., 2015; Jabbour et al., 2020; Jamous et al., 2013; Luthra et al., 2015; Nagypál, 2014), although some authors have found that environmental regulations do not influence the decision to adopt sustainable production policies when this is part of the company's strategic intent (Reyes-Rodríguez et al., 2014).

Thus, the drivers of sustainability are factors both internal and external to the organization (Zhang et al., 2020). In particular, some common factors are stakeholder pressure, awareness of environmental issues, the level of support from local authorities, the benefits of adopting such practices, and the role of environmental regulations (Nikolaou et al., 2013). With reference to stakeholders, in order to foster greater transparency, some studies (Calabrese et al., 2016) have noted the importance of reporting on the material aspects of sustainability, based on the Global Reporting Initiative (GRI) guidelines. Others, however, have identified specific indicators for assessing sustainability in SMEs (Kassem & Trenz, 2020; Schmidt et al., 2018; Tan et al., 2015). Increasing consumer attention (Dey et al., 2019b) to the problem of pollution has also motivated more and more SMEs to adopt green production strategies (Kamarudin & Aslan, 2017), improving product quality (Larrán Jorge et al., 2016)

and customer satisfaction (Suriyankietkaew, 2016), although there are several barriers (economic, market, political, information, technical and managerial) to their implementation (Al Asbahi et al., 2020; Meath et al., 2016).

In fact, some studies have identified sustainable manufacturing practices that could help SMEs to improve the three aspects of sustainability (economic, environmental and social), represented not only by relations with customers, but also relations with suppliers and employees (Ahmad et al., 2018; Caldera et al., 2018, 2019). Sustainable management of the entire supply chain (SSCM) is necessary (Amin, et al., 2019; Bournakis et al., 2016), and can only be achieved through effective collaboration between all stakeholders (Ghadimi et al., 2020; Panigrahi & Rao, 2018; Suh & Lee, 2018), by promoting relationships with sustainability-conscious suppliers (Majumdar & Sinha, 2019).

Others have argued that the implementation of environmental initiatives by SMEs could jeopardize business continuity, especially for companies in the early stages of their life (Amankwah-Amoah & Syllias, 2019).

## 4. DISCUSSION

This study examined the relationship between board gender diversity-understood in a comprehensive manner-and environmental and financial performance. The choice to consider both financial and environmental performance is related to their close correlation. In this regard, the literature states that the increase in environmental concern has led to a real revolution in production philosophy, where, for example, recycling and reduction of wasted resources (Henriques & Catarino, 2015; Witczak et al., 2014) represent an opportunity to save costs, improve the efficiency of products as well as financial performance, while encouraging innovation (Cegarra-Navarro et al., 2016; Martinez-Conesa et al., 2017; Pusnik et al., 2014). So, the focus on environmental issues and, in general, on sustainability is recognized as one of the factors that allow SMEs to preserve their competitiveness (Chang & Cheng, 2019), while also improving their corporate image and reputation (Agan et al., 2013).

The SLR highlighted three strands of research.

As for the first strand of research, it emerged how top management's awareness of social and environmental issues is a central factor in integrating CSR into corporate strategy (Kraus et al., 2017; Park et al., 2017).

The second strand of research highlights the importance of board diversity in improving both SMEs' environmental and financial performance (Esteban-Salvador & Gargallo-Castel, 2019). However, mixed results were found according to the gender difference considered. As explained, in this study, gender diversity is understood in a broad sense: not only man/woman differences considered, but also age, ethnicity, culture, nationality, etc. According to some studies, the inclusion of women and youth on SME boards contributes significantly to sustainable development because of their greater sensitivity to environmental issues (Orobias et al., 2020). Other studies, however, found that in more developed markets men perform better in environmental



performance; in emerging markets, the male/female difference is not significant (Butkouskaya et al., 2020).

So, there are studies that have found no relationship between gender diversity and sustainability (Cucari et al., 2017; Galbreath & Shum, 2012), while others found a positive correlation (Birindelli et al., 2018). With specific reference to SMEs, it is believed that they can improve their sustainability if they have a gender-balanced management team (Graafland, 2020).

The studies analyzed, however, look at the impact of board diversity in SMEs — in terms of gender, age, and ethnicity — predominantly on financial performance (Dang et al., 2018; Salloum et al., 2017; Shehata et al., 2017; Wu et al., 2017).

The SLR also showed that gender diversity was mainly investigated in terms of male/female differences, age, and nationality. These certainly represent the information most easily accessed. In contrast, information such as educational background, religious and sexual orientation, and culture represent information that is difficult to obtain, especially with reference to the context of non-listed SMEs.

So, the topic of gender diversity in the literature, although widely explored, has limitations related to the unavailability of information that allows one to analyze diversity overall.

As for the third strand of research, it was found that the board of SMEs is influenced by both internal and external factors when implementing a sustainable strategy. For example, economic incentives, regulation, and increasing stakeholder and employee attention to sustainability issues are all factors that influence the adoption of sustainable business strategies (Isensee et al., 2020; Raza et al., 2019). In addition, there are also many benefits associated with the adoption of sustainable policies, for example, in terms of cost reduction and efficiency improvement (Martinez-Conesa et al., 2017). It should be considered, however, that for SMEs the road toward sustainability faces limitations represented by the high investments that sustainability requires and limited resources. This represents a major critical issue hindering SMEs' sustainability.

## 5. CONCLUSION

This paper aimed to conduct a systematic literature review on the relationship between board gender diversity and financial and environmental performance in SMEs.

The literature review conducted on the WoS database, referring to the period 2013–2020, revealed 109 relevant contributions. The SLR revealed three prevailing strands of research:

- 1) the entrepreneurial orientation of top management toward sustainability;
- 2) the influence of board diversity on sustainability;
- 3) sustainability drivers and barriers.

As for the first strand of research, the conclusion reached by most scholars is that among the main critical success factors for implementing sustainable strategies, a central role is played by top management, which must show a very proactive attitude toward the resolution of environmental issues by investing in corporate

sustainability (Jahanshahi & Brem, 2017; Pereira et al., 2020; Yacob et al., 2019).

Conversely, the drivers of sustainability are factors both internal and external to the organization (Zhang et al., 2020). In particular, some common determinants are stakeholder pressure, awareness of environmental issues, the level of support from local authorities, the benefits of adopting such practices, and the role of environmental regulations (Nikolaou et al., 2013).

Regarding the second strand of research, the analysis showed that the issue of board diversity in promoting corporate sustainability is still an under-researched topic; however, the literature on the relationship between diversity and financial performance is more extensive (Martin-Ugedo & Minguez-Vera, 2014; Salloum et al., 2017; Shehata et al., 2017). Diversity is a key factor in corporate value creation (Huse et al., 2009) although the results produced by the literature on the issue are mixed (Cucari et al., 2017; Kassinis et al., 2016; Galbreath & Shum, 2012).

As for the last strand, research analyzing the relationship between the board of directors and environmental and financial performance has extensively focused on the drivers and barriers that influence SMEs' sustainability. In this sense, the board is influenced both by factors internal (employees) and external to the organization (regulation, stakeholders) when implementing sustainable strategies.

In conclusion, literature has extensively addressed the barriers to sustainability in SMEs, and the benefits of adopting green production policies, especially in terms of improving performance and increasing innovativeness (Fonseca & Ferro, 2016; Maldonado-Erazo et al., 2020; Masocha, 2018). In contrast, few studies have addressed the effects of a crisis context (such as the COVID-19 pandemic or the 2008 recession) on corporate sustainability (Panwar et al., 2015).

Therefore, this is an interesting aspect of exploration in literature to understand how factors represented by the pandemic or the current energy crisis accelerate or hinder SME sustainability. In addition, it would be interesting to understand whether these market conditions have stimulated a path toward sustainability that was already started or whether instead they have imposed and thus forced the process.

Behind this work is the belief that board diversity represents an opportunity to improve efficiency and corporate financial performance while promoting innovation and sustainable development in SMEs. While the factors that hinder or drive the path toward sustainability are clear, diversity as a driver or barrier to this process has been only partially investigated. Further future research lines should, therefore, address the role of board diversity on an SME's financial and sustainable performance from different perspectives. In this regard, it would be interesting to analyze diversity not only by gender, age, and nationality, but also by assessing other aspects such as education and skills, and religious orientation.

This is information that is not readily available, especially when SMEs are unlisted. For this investigation, the exploration of a case study or multiple-case studies would allow us to capture this

information and understand whether the presence of different religious orientations or different cultures or training on the board influences sustainability.

In terms of practical implications, this study provides a comprehensive theoretical framework on what has been investigated to date with reference to the topic of board diversity and environmental and financial performance; in this sense, the study offers important considerations on the direction of future publications on the topic, encouraging the exploration of less developed issues.

In this regard, the analysis reveals a space for scholars who, building on what has already been done, seek to propose appropriate frameworks to support companies in the process toward sustainability, perhaps illustrating successful

experiences from appropriately selected case studies.

From the perspective of practical implications, the study provides evidence of the importance of gender diversity on boards in SMEs in improving environmental and financial performance, helping to better understand what form of diversity within the board supports corporate sustainability.

The study presents limitations. The bibliometric review conducted provides a state-of-art view of the topic investigated limited to the WoS database. For this reason, some limitations related to the method in which the papers were categorized cannot be ignored by not considering other databases such as Scopus, Google Scholar, or Microsoft Academic.

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## APPENDIX

Table A.1. Papers on the relationship between diversity and economic-financial and sustainability performance from Web of Science (WoS) database

<i>Journal title</i>	2013	2014	2015	2016	2017	2018	2019	2020	Total
Advanced Science Letters							1		1
Annals of Operations Research								1	1
Applied Economics					1				1
Applied Economics Letters						1			1
Asia Pacific Journal of Innovation and Entrepreneurship					1			1	2
Asia Pacific Journal of Marketing and Logistics								1	1
Asian Journal of Shipping and Logistics				1					1
Asia-Pacific Journal of Business Administration				1					1
Benchmarking — An International Journal					1				1
British Journal of Management								1	1
Business Strategy and Development								1	1
Business Strategy and The Environment					1	1	1	4	7
Cogent Business & Management				1					1
Corporate Social Responsibility and Environmental Management				1	1		2	4	8
Environmental Engineering and Management Journal	1								1
Environmental Science and Pollution Research								1	1
European Journal of Sustainable Development						1			1
European Management Journal				1					1
Feminist Economics		1							1
Frontiers in Psychology								1	1
Gender in Management						1			1
Independent Journal of Management & Production								1	1
Intangible Capital				1					1
International Entrepreneurship and Management Journal						1			1
International Journal of Production Economics		1						1	2
International Journal of Sustainable Development and World Ecology						1			1
Journal of Cleaner Production	1		1	3	2	2	2	6	17
Journal of East European Management Studies		1							1
Journal of Enterprising Communities-People and Places in The Global Economy				1					1
Journal of Indian Business Research							1		1
Journal of Integrative Environmental Sciences	1								1
Journal of Manufacturing Technology Management							1	1	2
Journal of Small Business and Enterprise Development					1				1
Journal of Small Business Management							1		1
Long Range Planning							1		1
Management of Environmental Quality						1			1
Organization & Environment			1						1
Research Journal of Textile and Apparel						1			1
Small Business Economics			1						1
Small Enterprise Research			1						1
Sustainability				2	5	8	2	5	22
Sustainable Production and Consumption							1		1
Symmetry-Basel								1	1
Conference Proceeding	1	3	4	1	2	1	1		13
<b>Total</b>	<b>4</b>	<b>6</b>	<b>8</b>	<b>13</b>	<b>15</b>	<b>19</b>	<b>14</b>	<b>30</b>	<b>109</b>

Source: Authors' elaboration.