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# Sustainability Drivers of Small and Medium-Sized Firms: A Review and Research Agenda

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**Abstract**

While increasing awareness of issues such as raising energy prices, increasing customer concerns about the safety of products and services, and the reduction of carbon emissions influence firms, scarce studies focus on small and medium-sized enterprises (SME). This study seeks to systematically analyse the literature focused on sustainability of SMEs. Bibliometric analysis of 220 articles included in the WoS database (Clarivate Analytics) database and visualization with VOSviewer software let us reveal the cooccurrence of author keywords, bibliographic coupling sources and references, leading journals, and countries. The second step of the research is based on a systemic review of 25 articles with the purpose of reviewing empirical findings in the field of firm-level sustainability of SMEs. The analysis has led to thematic commonalities considering resources and capabilities, strategy, stakeholders, human capital, and innovations. The paper fills the literature gap on systematic analysis of SME and sustainability and develops recommendations on how to address prevailing research gaps.

**Keywords**

Sustainability, SMEs, Bibliometric analysis, Thematic commonalities

**JEL Classification**

L210, Q01

## Introduction

Sustainable development has attracted considerable attention from policy makers, media, and business. Increased awareness of issues such as increasing energy prices, increasing concerns for the safety of products and services, and the reduction of carbon emissions influence all – large, medium, and small firms. Apparently, firms are challenged to take into account their impact on the environment and society. On the other hand, studies demonstrate the belief that business plays a leadership role in sustainability issues (Senge et al. 2007; Li et al. 2020). Thus, within this context, various streams of studies have emerged focused on sustainability issues.

While previous studies have often focused on sustainability drivers of large companies, the last years have developed broader understanding on sustainability related factors in small and medium sized enterprises (SMEs). However, despite the prevailing concerns, some uncertainty remains in relation to SMEs. Although SMEs are considered to be a driving force in addressing sustainability issues due to their entrepreneurial character, studies reveal their reluctance to consider sustainability due to lack of appropriate resources (Roy and Therin, 2008; Koirala, 2018; Fetter 2019) and the belief that sustainability measures may require considerable costs (Hoogendoorn et al. 2015). Furthermore, there are scarce studies focusing on SMEs (Walker et al., 2008). To conduct systematic research in the area of sustainability drivers relevant for SMEs is significant because they comprise a large group of firms in various countries, contribute as a group to overall pollution, and demonstrate the propensity to sustainability (Aragón-Correa et al., 2008). Thus, solid foundations are required for future investigations.

Although some studies attempted to focus on some aspects of sustainability in the context of small businesses, only a few conducted a review with clearly defined criteria and process. More specifically, Klewitz and Hansen (2014) conducted a review that focused on sustainability-oriented innovation practices and strategic sustainability behaviors of SMEs. Meanwhile, Isensee et al. (2020) conducted the review, which investigated the relationship between organizational culture, sustainability, and digitalization in SMEs. Alvarez Jaramillo et al. (2018) investigated barriers to sustainability of SMEs. In general, there seems to be a research gap on the complex

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understanding of sustainability drivers of SMEs, advancing our understanding. Therefore, this study aims to fill this research gap and seeks to analyse the literature focused on sustainability and SMEs. Bibliometric analysis of 2220 papers included WoS (Clarivate Analytics database), and the visualization with VOSviewer software let us reveal top countries, journals, investigate co-occurrence of keywords, co-citation of references, authors, and sources. Therefore, insights have been developed into the trends and general developments of research related to the sustainability drivers of SMEs. Next, a systematic review of the literature has been performed with the purpose of reviewing empirical findings in the field of sustainability drivers of SMEs and identifying research gaps. More specifically, the papers from the high-ranked journals, which focus on SMEs, are identified, thematic commonalities are defined, and suggestions how to tackle the research gaps are provided. Thus, the paper fills the literature gap on systematic analysis of SMEs sustainability and develops recommendations for future investigations.

The paper is organized as follows. First, the theoretical background is presented. The next section presents materials and methods. In the fourth section, the discussion of review and theory development is provided. Conclusions are presented in the final section.

## Literature Review

Though the definition of sustainable development was introduced more than twenty years ago, this concept predominates in the modern political, economic, and social arena. The popularity of sustainability has been observed since 1987, when the Brundtland Report from the World Commission on Environment and Development (WCED) of the United Nations has been introduced. In particular, the accepted definition of sustainable development refers to development “that meets the needs of the present generation without compromising the ability of future generations to meet their own needs” (WCED, 1987: 43). The definition emphasizes the limits of natural systems and the need to use renewable resources. Thus, the focus on sustainable development requires the integration of diverse environmental, economic, and social objectives and even places these objectives on an equal footing.

The literature on sustainability provides two different conceptions by emphasizing strong and weak sustainability. While strong sustainability refers to 'natural capital' that should be sustained, weak sustainability refers to well-being (Beckerman, 1995). In particular, weak sustainability can be explained as a state in which 'well-being does not decline over time' (Pearce, 1993). Meanwhile, strong sustainability is more in line with environmentalalism than weak sustainability. However, both definitions have been criticized due to limitations (Jamieson, 1998). Scholars observed that the current pattern of resource use does not allow achieving sustainable development without the reduction of the pace of economic growth (Hall et al. 2010). Apparently, neither developed nor developing economies are able or willing to sacrifice economic growth. Considering the prevailing model of capitalism, some criticism towards sustainable development has been expressed in the scientific literature (Balakrishnan et al. 2003). Thus, the response to the critics triggered a number of research streams focused on economic and social transformations through innovations (Klewitz et al. 2014), leadership of the firms in developing sustainable products and services or eco-friendly entrepreneurs (Hall et al. 2010).

Despite the different streams prevailing in the scientific literature, this study will focus on firm-level sustainability. The literature emphasizes that business sustainability is gained through the implementation of environmental goals and corporate social development (Li et al., 2020). Moreover, an interrelationship between social and corporate sustainability, contributing to sustainable development of society and economy, has been emphasized (Szekely and Knirsch, 2005). Subsequently, the definitions suggested in the extant literature integrate environmental, economic, and social outcomes (Benkert 2020). Thus, the study will be guided by the definition of sustainability at an organizational level which refers to 'systematic management efforts by corporations to balance environmental and social goals with economic ones in order to minimize harm to and increase benefits for natural environments and societies' (Klewitz et al. 2014). More specifically, the study will focus on SMEs, which comprise a distinct group of firms compared to large corporations (Korsakienė et al. 2018). The definition adopted by the EU considers a number of the personnel employed in the firm, turnover, or total balance sheet. Therefore, the attribution to SMEs is defined by the following criteria: fewer than 250 employees and an annual turnover not exceeding €50 million or an annual balance sheet total not exceeding €43 million (European Commission 2015). SMEs are seen as very significant to the economy of the EU due to a large number of established firms (account for 99.8% of all businesses in nonfinancial business), contribution to new jobs (66.6% of all jobs) and value added (56.4%) (European Commission, 2018/2019). However, investigations confirm that SMEs make up 60-70% of industrial pollution in Europe (Koirala, 2018). Therefore, the impact of an individual firm can be low, but the impact of all sectors can be high if the number of firms is large. Compared to their larger counterparts, SMEs experience a number of difficulties when becoming more resource efficient, especially complex administrative or legal procedures and a lack of specific environmental expertise (IMIES 2015; Ehrenberger et al. 2015). Thus, the literature reports on the 'reactive' behavior of SMEs towards environmental and social issues (Klewitz et al. 2014). On the other hand, SMEs demonstrate entrepreneurial style, and their managers can disclose sustainability-related opportunities and seek to implement innovations. Not surprisingly, sustainability issues expose both, the threats and opportunities for the resource scarce firms.

## Methods

Based on the increasing popularity of bibliometric analysis (Bužavaitė et al. 2019), the purpose of the first step of our investigation was to gain insight into the trends and general developments of research related to the sustainability drivers of SMEs. The first step includes four stages (Figure 1).

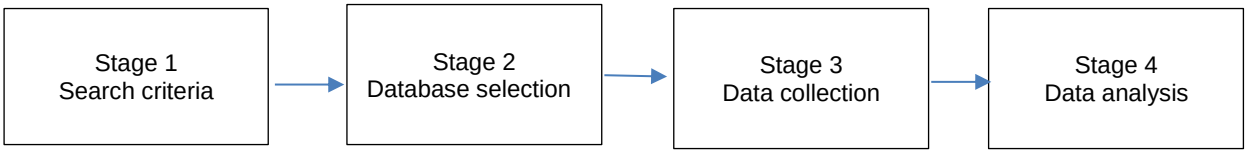


**Fig. 1.** The four stages of analysis.

Stage 1: Search criteria. The following keywords: 'sustainable development' or 'environmental management' and 'SME * or small firm* or small business* or small and medium enterprise' were used to search for research articles.

Stage 2: Database selection. Data were retrieved from the WoS (Clarivate Analytics) core collection database due to wide coverage and comprehensive content (Savaranan et al. 2022). Moreover, the database is recognized as the scientific database, indexing the most cited journals in the respective fields (Pedro et al. 2018).

Stage 3: Data collection. The search provided 2,220 articles published in English from 1990 to 2019.

Stage 4: Data analysis. Later, the data were analysed by the software 'VOSviewer'. The software was developed with the aim of demonstrating and studying in detail bibliometric networks (van Eck et al. 2017). Furthermore, the software appears to be advantageous as compared to other software in terms of functionality and easy ways of interpreting data. The tool lets us investigate co-occurrence of keywords, co-citation of references, authors, and sources. The results of this stage are presented in Section 4.

Taking into account the advantages of systematic review of the literature (Mallinguh and Zeman, 2020), the purpose of the second step of our research was to review empirical findings in the field of sustainability drivers of SMEs and reveal research gaps. This approach allowed scientists to develop a systematic overview in the thematic fields. Following the guidelines developed by Wan et al. (2011) and Demir et al. (2017), the literature review process attempted to focus on research on sustainability drivers within the business and management field. Furthermore, the research included only studies at the firm level. The second step includes three stages.

Stage 1: Examination of selected journals. The focused examination of selected journals, included in a guide of academic journals published within the field of business and management (the Chartered Association of Business Schools, 2018) was carried out. The search considered the leading journals in general management, entrepreneurship, innovation, and sustainability (Demir et al. 2017). Selected journals are presented in Table 1.

**Table 1.** Selected journals.

| Thematic field | Journal title and Journal Impact Factor ™ (2020) |
|---|---|
| General management journals | Academy of Management Journal (IF 10.194); Administrative Science Quarterly (IF 11.113); Journal of Management (IF 11.79); Journal of Management Studies (IF 7.388); Long Range Planning (IF 8.802); Management Science (IF 4.883); Organization Science (IF 5), Strategic Management Journal (IF 8.641) |
| Entrepreneurship journals | Journal of Business Venturing (IF 12.065), Strategic Entrepreneurship Journal (IF 9.289), Entrepreneurship Theory & Practice (IF 10.075), Small Business Economics (IF 8.164), International Small Business Journal (IF 5.473), Entrepreneurship & Regional Development (IF 5.149), Journal of Small Business Management (IF 4.544) |
| Innovation journals | Industrial and Corporate Change (IF 3.085); Research Policy (IF 8.11); Technovation (IF 6.606) |
| Sustainability journals | Journal of Cleaner Production (IF 9.297); Corporate Social Responsibility and Environmental Management (IF 8.741); Business & Society (IF 7.389) |

Although the Journal of Cleaner Production is not included in a guide of academic journals, the decision to consider this journal was motivated by the highest ranking in the sustainability field. These journals were distinguished as the leading journals in management, entrepreneurship, and innovation in previous studies (Macpherson and Holt, 2007). The examination of articles in selected journals has been conducted considering keywords applied in the first step of our study. In particular, the results of the focused search resulted in 115 papers.

Stage 2: Exclusion criteria. Taking into account the purpose of reviewing empirical research findings, we manually analysed the abstracts and articles. Accordingly, number of articles were excluded (e.g., articles published in non-

English scholarly journals, published in books, magazines, etc.). Moreover, the research excluded the articles that did not provide original research findings (e.g., reviews, etc.). Finally, articles that did not consider firm-level aspects of SMEs' sustainability drivers were eliminated. The procedure narrowed the final sample to 25 papers published in the period 1990-2019.

Stage 3: Analysis. The analysis of selected articles has led to the identification of the research sample, analytical approach, sustainability drivers used as independent variables, sustainability measures used as dependent variables in scientific studies, and the main findings. The next step of the analysis included thematic commonalities observed in the selected articles. Referring to the acknowledged procedure (Demir et al. 2017), the articles were coded to disclose the drivers of SMEs sustainability. The coding of the selected articles was carried out by disclosing thematic commonalities between the selected articles and identifying the theoretically investigated drivers of sustainability. For this purpose, the independent variable used in the article was investigated and related to the established theoretical field within the literature on management and entrepreneurship. The initial coding was carried out by the authors independently and later discussed for agreement. In this process, we distinguish the following domains: resources and capabilities, strategy, human capital, stakeholders, and innovations. The results of this stage are presented in section 5.

## Results

Although the research was split into two steps, this section will present the findings of the first step, i.e., insights into the trends and overall developments of research related to the sustainability drivers of SMEs. Thus, the findings present an analysis of 2200 articles included in WoS. Although discussions surrounding sustainability in general have emerged in the 1980s, the interest in sustainability and SMEs has increased in the last decade (Fig. 2).

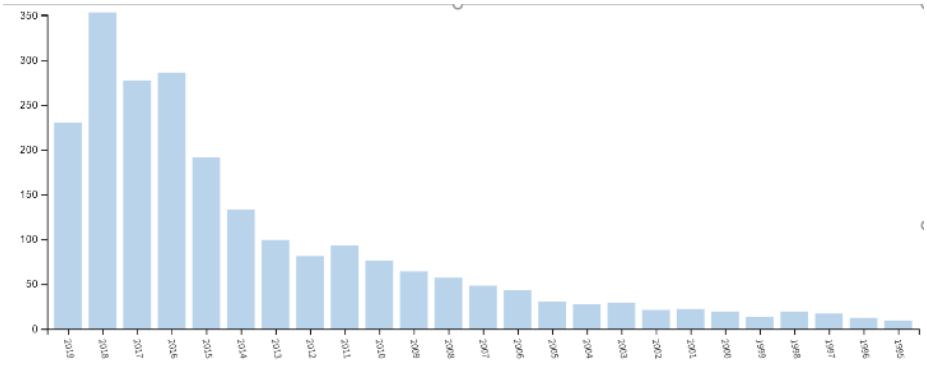


**Fig. 2.** Number of papers in 1990-2019 (Source: Clarivate Analytics).

Apparently, the focus of the researchers was triggered by adopted initiatives at both at political and business levels. First, number of governmental initiatives have been adopted by various countries since The Brundtland Report to the United Nations in 1987 (Hall et al., 2010).

**Table 2.** Top countries considering published articles.

| Country | Record count | % |
|---|---|---|
| USA | 373 | 16.802 |
| England | 252 | 11.351 |
| Peoples rep. China | 197 | 8.874 |
| Spain | 147 | 6.622 |
| Australia | 146 | 6.577 |
| Italy | 118 | 5.315 |
| Canada | 116 | 5.225 |
| Germany | 99 | 4.459 |
| France | 80 | 3.604 |
| India | 78 | 3.514 |

**Source:** Clarivate Analytics.

Second, collaborative initiatives of businesses such as the World Business Council for Sustainable Development, the Global Reporting Initiative, and others have resulted in a change in the attitude of business leaders (Senge et al. 2007). Furthermore, the 2030 agenda for sustainable development established number of objectives focused

on social, environmental, and economic issues (Sustainable development goals, 2015).

The analysis of the publications included in the WoS database revealed that most of the publications (out of 2200) were published by scholars from developed countries. However, the numbers of articles from China and India are also very significant (Table 2). The policy directions defined by governments, appropriate regulation, and awareness of society contribute to the increased studies in the area. Meanwhile, a lack of clear guidelines for sustainable development for various players appears to be the main barrier in the context of developing countries. Thus, a lack of publications, investigating entrepreneurship and environmentally oriented sustainable development, from the perspective of developing countries was acknowledged by other scholars (Hall et al. 2010).

The top journals with the highest number of published articles are Journal of Cleaner Production (9.144%), Sustainability (5.450%), Business Strategy and the Environment (1.892%), Journal of Business Ethics (1.532%) and Corporate Social Responsibility and Environmental Management (1.171%) (Table 3). Meanwhile, other journals published a lower number of papers in the field. Moreover, some top journals are assigned to the following WoS (Clarivate Analytics) categories: Engineering, Environmental Sciences, Green & Sustainable Science & Technology (e.g., Journal of Cleaner Production; Sustainability; Resources Conservation and Recycling; Environmental Science and Pollution Research; International Journal of Life Cycle Assessment).

**Table 3.** Top journals considering the number of published articles.

| Source titles | Record count | % |
|---|---|---|
| Journal of Cleaner Production | 203 | 9.144 |
| Sustainability | 121 | 5.450 |
| Business Strategy and the Environment | 42 | 1.892 |
| Journal of Business Ethics | 34 | 1.532 |
| Corporate Social Responsibility and Environmental Management | 26 | 1.171 |
| Journal of Small Business Management | 21 | 0.946 |
| Resources Conservation and Recycling | 20 | 0.901 |
| Management Decision | 18 | 0.811 |
| Environmental Science and Pollution Research | 16 | 0.721 |
| International Journal of Life Cycle Assessment | 16 | 0.721 |

**Source:** Clarivate Analytics.

Keywords analysis attempts to disclose the papers with the particular keyword. Taking into account the keywords provided by the scholars in the abstracts of the articles, the main research topics in relation to SMEs and sustainability were defined. In particular, the size of the node in the network represents the greater weight of the keyword. Furthermore, the distance between the nodes in the network explains the strength of the relationships. VOSviewer software identifies clusters of keywords, which are presented in different colours (Fig. 3). In particular, of the 6172 keywords, 250 met the threshold of 5 occurrences of the keyword. The analysis resulted in 12 clusters. The main five clusters let us gain an overview of the predominant contents of scientific publications. The red cluster led by the keyword 'sustainability' is the largest and includes 35 items. The green cluster includes 33 items and is led by the keyword “life cycle assessment”. The blue cluster includes 31 items and is led by the keyword “China”. The light green cluster contains 27 items and is led by the keyword “innovations”. The violet cluster includes 24 items and is led by the keyword 'SMEs'.

Co-citation analysis aims to reveal the documents where two papers are cited together. Notably, the result of co-citation analysis refers to the co-citation clusters and the documents assigned to the particular cluster (Boyack et al. 2010). VOSviewer software let us investigate co-citations of references, sources, and authors. Of the 9227 cited references, 192 met the threshold of 20 citations of a cited reference. The analysis has led to the 5 clusters (Fig. 4). The biggest cluster in red colour includes 57 items and is led by Barney, J. (1991) who was cited 142 times (total link strength 1364). Meanwhile, cluster in green colour includes 45 items is led by Eisenhardt, K.M. (1989) who was cited 70 times (total link strength 4030). The blue group includes 34 items and is led by Aragon-Correa, J.A. (2008) who was cited 89 times (total link strength 1341). Cluster in yellow colour includes 31 items and is led by Hart, S. L. (1995), who was cited 102 times (total link strength 1435). Finally, the cluster in violet colour includes 25 items and is led by Jenkins, H. (2006), who was cited 58 times (total link strength 841).

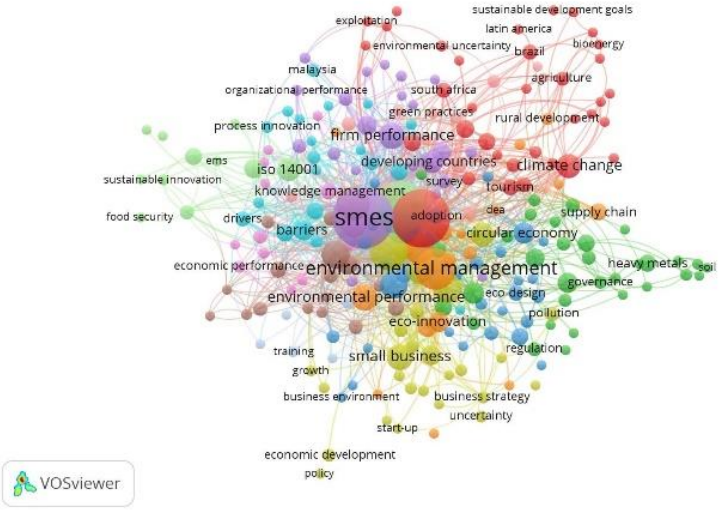


**Fig. 3.** Co-occurrence of author keywords in the publications.
**Source:** The authors' compilation.

The paper published by Barney (1991) discusses strategic resources of the firm contributing to the competitive advantage. Meanwhile, Eisenhardt (1989) explains agency theory and the contribution to the theory of organization. Aragón-Correa et al. (2008) investigated the types of environmental strategies adopted by SMEs in southern Spain. The study disclosed organizational capabilities that contribute to the performance of SMEs. Grounded in resource-based theory, Hart (1995) suggested a natural resource-based view of the firm. Finally, Jenkins (2006) attempted to explain the limitations and opportunities of social responsibility by investigating SMEs in the UK.

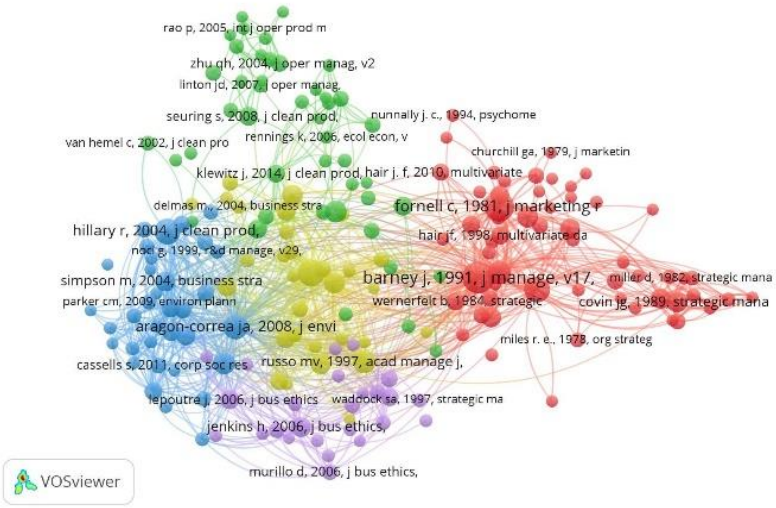


**Fig. 4**. Co-citations of cited references.
Source: The authors' compilation.

Co-citation analysis of sources discloses the clusters of journals. Of 36937 sources, 658 met the threshold of 20 sources citations. The analysis revealed five clusters of co-cited journals (Fig.5).

The red cluster is the largest in the network and includes 229 items. This cluster is led by the journals Ecological Economics (601 citation), Journal of Environmental Management (483 citations), Recourses, Conservation and Recycling (446 citations), Energy Policy (460 citations). Apparently, this group consists of journals from different categories. However, the journals from the categories of environmental sciences, ecology, environmental studies, and economics predominate. The green cluster includes 116 items and is led by the following journals: Resources Policy (818 citations), Technovation (572 citations), Journal of Business Research (639 citations) and Management Science (617 citations). The cluster is comprised of journals included in the following categories: environmental studies, operations research and management, engineering, and business. Cluster in blue colour includes 93 items and is led by the following journals: Strategic Management Journal (2124 citations), Academy of Management Journal (1660 citations), Journal of Business Venturing (879 citations). The cluster includes journals from the

categories of business and management. Cluster in yellow colour includes 90 items and is led by the following journals: Journal of Business Ethics (2010 citations) and Business Strategy and the Environment (926 citations). The cluster includes journals from the categories of business, management, and environmental studies. Cluster in violet colour includes 81 item and is led by the journal: Journal of Cleaner Production (4288 citations). The cluster comprises journals from the following categories: engineering, environmental sciences, and green and sustainable science and technology. Cluster in the light blue colour includes 49 items and is led by the journal Tourism Management (439 citations). The cluster is composed of journals of the management category.

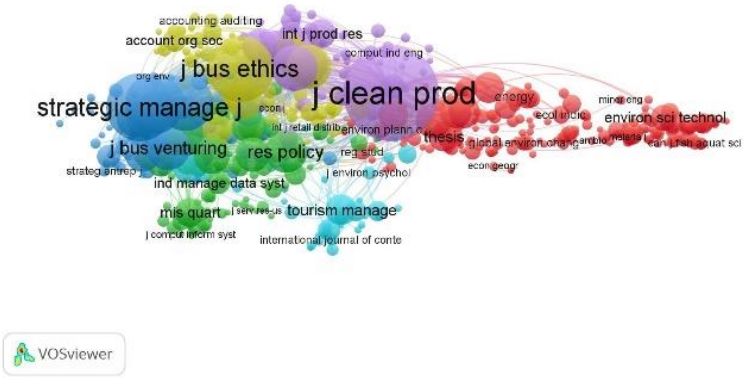


**Fig. 5.** Co-citations of cited sources.
**Source:** The authors' compilation.

Co-citation analysis of cited authors reveals the main clusters of researchers. Of the 59378 authors, 519 met the threshold of 20 citations by the author. Furthermore, five clusters of scholars were identified (Fig. 6).

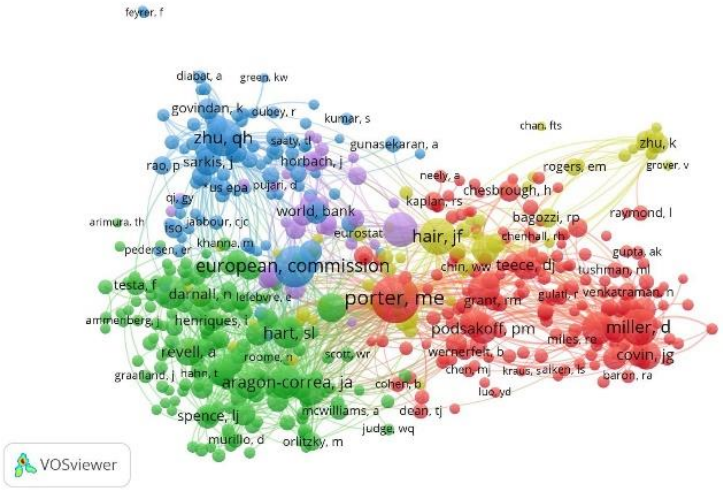


**Fig. 6.** Co-citations of cited authors.
**Source:** The authors' compilation.

The cluster in red colour includes 173 items and is led by Porter, M.E (431 citations and 9478 total link strength). In addition, this cluster comprises Eisenhardt, K.M. (183 citations and 4116 total link strength) and Miller, D. (249 citations and 5991 total link strength). The cluster in green includes 154 items and is led by Aragon-Correa, J.A. (194 citations and 6542 total link strength) Hillary, R. (206 citations and 4863 total link strength) and Hart, S.L. (183 citations and 5346 total link strength). The blue cluster includes 97 items and is led by the European Commission (311 citations and 5093 total link strength) and Zhu, Q.H. (255 citations and 6273 total link strength). The yellow cluster includes 62 items and is led by Hair, J.F. (253 citations and 6286 total link strength). Finally, cluster in violet colour includes 32 items and is led by the OECD (218 citations and 3459 total link strength).

## Discussion of review and theory development

The second step of analysis let us examine articles of selected top journals. Taking into account the methodologies used, of the 25 articles selected for the review, 4 (18%) are qualitative and 21 (82%) are quantitative. Although qualitative methods contribute to the theory building, the small number of qualitative studies represents an opportunity for future research. Taking into account the dependent variables, the scholars used various measures related to organizational-level sustainability. In particular, 7 (28%) studies considered environmental, CSR or sustainable development practices adopted in firms. The researchers used the sum of the firm's proactive environmental practices (Darnall et al. 2010; Lewis et al. 2011), considered CSR practices (Choi et al. 2019; Graafland et al. 2016), manufacturing practices (Aboelmaged et al. 2018) or whether the firms implemented practices reducing their environmental impact (Battisti et al. 2011) and the regularity of participation in sustainable development practices (Ayuso et al. 2018). Furthermore, 8 (32%) studies looked at environmental performance (Tang et al. 2012; Zhu et al. 2019; Testa et al. 2016), sustainability performance (Wu 2017; Eikelenboom et al. 2019), financial performance (Qian et al. 2018; Djupdal et al. 2015; Stoian et al. 2017). Meanwhile, 4 (16%) studies used managers' perception data, focusing on motives (Reyes-Rodríguez et al. 2016; Worthington et al. 2005), eco-friendly orientation (Leonidou et al. 2016) or understanding nature (Kearins et al. 2010). Two studies (8%) looked at a specific type of innovation (Brown et al., 2007; Zhu et al., 2019). Two (8%) studies used perception data of managers and looked at various external and internal challenges (McKeiver et al. 2005; Roy, M.J. 2008). Finally, one study (4%) looked at sustainability management tools (Johnson 2015) and one study (4%) looked at green processes, products, / services (Hoogendoorn et al. 2015).

Taking into account the drivers of sustainability, the majority of the studies addressed one driver of sustainability. In particular, resources and capabilities 12 (48%), strategy 8 (32%), and stakeholders 5 (20%) were the most used drivers. Meanwhile, 3 (12%) articles dealt with human capital and 2 (8%) with innovations.

*Resources and Capabilities*

The literature on resource-based view (RBV) emphasizes that unique bundle of tangible and intangible resources and capabilities indicates activities the firm is competent of carrying out resourcefully (Barney, 1991). Accordingly, the ability to purposefully enact "resources, practices, and processes as well as to change, modify, and replace these in order to achieve certain goals or ends beneficial to the firm" and lead to the development of capabilities (Demir et al. 2017). Considering prevailing approach (Demir et al. 2017), we adopt the view that capabilities are embedded in the firm's employees' practices, technologies and systems. Accordingly, the emphasis is put on firm-level attributes instead of individual-level attributes.

Leonidou et al. (2016) found that appropriate organizational resources and capabilities devoted to environmental activities positively influence the relationship between eco-friendly orientation and financial performance. The investigation conducted in the Netherlands disclosed the effect of external integrative dynamic capabilities on social, environmental, and economic performance of SMEs (Eikelenboom et al. 2019). Meanwhile, the investigation of Canadian manufacturing SMEs revealed that these firms do not have internal capabilities to tackle environmental issues, and thus have to rely on external knowledge sources (Roy, M.J., 2008). Choi et al. (2019) found that dynamic capabilities such as knowledge accessing, co-development, supply chain rebuilding supply chain partner development, and flexibility facilitate CSR practices among Chinese SMEs. Furthermore, Wu (2017) suggested that socially responsible supplier development can effectively support SMEs to enhance their sustainability-oriented capabilities. Therefore, the scarceness of resources and capabilities of SMEs can be compensated by participation in networks, cooperation with various partners and governmental support mechanisms.

In particular, the size of the companies is often considered in scientific studies. The explanation lies in the fact that larger firms have better access to resources. Darnall et al. (2010) found that smaller firms adopt fewer environmental practices compared to larger firms. However, smaller firms have the ability to respond with greater vigour to stakeholder pressure due to scarce resources, simplified decision-making processes, and propensity to innovate (Darnall et al. 2010). Hoogendoorn et al. (2015) disclosed that medium-sized SMEs defined in terms of employees and turnover are most likely to carry out environmental practice. Meanwhile, the participation in green products and services was independent of the size of the firm. Similarly, Hoogendoorn et al. (2015) concluded that medium-sized firms have higher propensity to adopt environmental initiatives as compared to small firms. On the contrary, Reyes-Rodrguez et al. (2016) suggested that both small and medium-sized firms are similarly engaged in environmental activities. Thus, SMEs can develop and deploy necessary capabilities due to flexibility to manage external relationships, entrepreneurial orientation and closer interaction.

Some scholars observed certification as an intangible resource. Djupdal et al. (2015) observed that environmental certification of SMEs in Norway contributes to innovations, legitimacy, and higher performance of the firms. Furthermore, such certification significantly reduces the information asymmetry perceived by external firms. A large-scale study across European countries suggested that ISO14001 certification significantly improved environmental impacts of SMEs (Graafland et al. 2016). Finally, some resources, such as asset newness, significantly influence the ability to create financial value for environmentally sensitive firms (Qian et al. 2018). Accordingly, SMEs' sustainability strategy depends on financial resources, innovative capacity, human resources

and external cooperation.

In conclusion, the analysis of the selected studies revealed some important insights. First, the importance of the resources and capabilities of SMEs appears to be the most researched field in the literature. Second, the size of the firms demonstrates contradictory results in different studies.

*Strategy*

The definition of strategy is assumed to be 'the dynamics of the firm's relationship with its environment for which the necessary actions are taken to achieve its goals and / or increase performance through rational use of resources' (Lansing et al. 2007). Although some industries are predominated by large companies, sustainability concerns reveal new opportunities for SMEs to develop new products or services. Brown et al. (2007) investigated two SMEs that are prominent in the introduction of fuel cell technology into the domestic power generation market. The findings revealed that niche cumulation and collaboration strategies are essential for SMEs in new high-tech industries. Meanwhile, Kearins et al. (2010) investigated visionary SMEs in New Zealand and disclosed that prioritization of the nature and adoption of different corporate environmental management modes may encounter profitability and growth issues in the future. Furthermore, Lewis et al. (2011) revealed that the owners of micro-firms do not interrelate environmental issues to the strategy or planning. Hence, the investigation of UK screen-printing firms revealed that the environmental response was driven by a strategy of legislative compliance (Worthington et al., 2005). Apparently, this alternative is less risky for SMEs that aim to survive in the short term. On the other hand, this strategy is assumed to be effective when competition is surrounded by price, product quality, and speed of response. On the contrary, the investigation of Danish SMEs revealed that the natural environment was assumed as the important aspect of competitive strategy (Reyes-Rodríguez et al. 2016). Apparently, environmental initiatives improve reputation and contribute to cost reductions due to the focus on the process efficiency. Referring to internationalization as a strategy, Ayuso et al. (2018) concluded that internationalization positively influenced commitment to sustainable development and especially in the context of developing countries. Stoian et al. (2017) argue that CSR activities must be aligned with a competitive strategy aiming to enhance the growth of SMEs. Surprisingly, Johnson (2015) found that management support through the strategic planning function was not significant for the implementation of CSR and environmental management tools.

To conclude, the analysis of selected studies revealed different patterns. First, the studies highlight the different approach of SMEs to sustainability issues in relation to the firm's strategy. Second, the analysis revealed that the strategy adopted by SMEs is a significant driver of sustainability.

*Human Capital*

The concept of human capital can be defined as much broader, including 'cognitive profiles and value structure – in addition to traditional attributes of human capital of knowledge, skills, abilities, and experiences' (Garcia-Carbonell et al. 2018). The behaviour of SMEs reflects the values and attitudes of owners and managers (Prakapavičiūtė and Korsakienė 2013). For instance, Battisti et al. (2011) disclosed that environmental sustainability is driven by personal values of owners/managers in New Zealand. Based on the Value Belief Norm (VBN) theory, which emphasizes attitudes and moral norms of individuals, the scholars revealed the positive relationship between owners/managers attitudes and environmental commitment both for small and micro firms (Testa et al. 2016). Meanwhile, McKeiver et al. (2005) revealed that firms with owners-managers who are highly educated have a high level of awareness of environmental issues.

Apparently, personal values play a significant role in the sustainability of SMEs. On the other hand, scarce studies in the field of human capital demonstrate a research gap in the current literature. Thus, the cognitive abilities, knowledge, skills, and experiences of entrepreneurs or employees demonstrate the potential for future studies, aiming to reveal the peculiarities of sustainability management in the context of SMEs.

*Stakeholders*

Referring to previous studies, the stakeholder is assumed as 'any group or individual who can affect or is affected by the achievement of the firm's objectives' (Tang et al. 2012). The studies disclosed that governments and the media have a greater influence on the environmental performance of SMEs in China (Tang et al. 2012). However, everyone should interpret the results with caution. For instance, the results may be context-specific to the Chinese tight state control. Furthermore, the weak institutional environment of some countries such as Egypt does not impact sustainable SMEs' manufacturing practices (Aboelmaged, 2018). Meanwhile, Hoogendoorn et al. (2015) found that in 36 countries SMEs that serve consumers are more likely to engage in greening their products and services than SMEs that serve other companies. These results suggest that customers as stakeholders play an important role in affecting SMEs. Furthermore, environmental legislation has a positive influence on greening product and service offerings, but no significant influence on greening processes. Similarly, Leonidou et al. (2016) confirmed the relationship of regulatory framework and environmental public concern with the eco-friendly orientation of SMEs in Cyprus. McKeiver et al. (2005) found that customers and employees' concerns are related to the level of implementation of the environmental management system. Finally, a large-scale study conducted throughout the EU revealed that the environmental performance of SMEs is more encouraged by the perceived

needs of civil society than by government regulations (Graafland et al. 2017).

The analysis suggests that the impact of stakeholders varies across firms, sectors, and countries. Thus, potential research could focus on understanding different stakeholders and their influence.

*Innovations*

The scientific literature refers to innovations as 'the implementation of a new or significantly improved product (e.g., change in product properties), process (e.g., changed delivery methods), marketing method (e.g., new product packaging) or organizational method (e.g., changes in workplace organization) in business practices, workplace organization, or external relations' (Klewitz et al. 2014). However, it appears that innovations are less observed in the field in relation to sustainability of SMEs. For example, Wu (2017) found that when Taiwanese SMEs adopt multidimensional sustainability-oriented innovations (product, process, and organizational innovations), their sustainability can be improved. Furthermore, scholars suggest that SMEs should be involved in technological innovations along with the adoption of environmental management systems. Meanwhile, Zhu et al. (2019) found that technology innovation, management innovation, and marketing innovation can help improve environmental performance of SMEs in China. The obtained results are not surprising considering size of SMEs. Accordingly, smaller firms are less prone to implement formalized management systems, routines and structures, which usually entail organizational innovations.

To conclude, the analysis revealed the research potential considering innovations. First, future studies can focus on different levels of innovation practices. Second, studies have to take into account the peculiarities of different industries.

## Conclusion

Although the interest of scholars in sustainability and SMEs has been increasing in the last decade, a lack of published papers in top management and business journals is observed. The paper disclosed the prevailing scientific knowledge and highlighted the research gaps on sustainability and SMEs. The insights presented in the paper let us to define future research agenda. The study contributes to our knowledge on sustainability drivers and SMEs. However, the study has some limitations. First, the literature review was performed taking into consideration only top ranked journals in general management, entrepreneurship, innovation, and sustainability. Moreover, the search was initiated in the WoS (Clarivate Analytics) database. Thus, future investigations have to consider other scientific journals (e.g., with lower quartile or published in multidisciplinary fields) and included in other databases (e.g., Scopus) for literature review. Second, the research method attempted to investigate particular articles. Thus, future investigations may to consider other methods for systematic research (e.g., reviews, etc.). Finally, as the research streams were defined considering drivers of sustainability, future investigations could analyse barriers-related issues.

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