Triggers for and barriers to the adoption of environmental management practices by SMEs: A critical review

Abstract

The current literature lacks an integrated and holistic understanding of what drives and inhibits the environmental management practices (EMPs) of small and medium-sized enterprises (SMEs), despite the large number of studies carried out in the area. In order to offer a nuanced understanding of the existing inventory of reported works on SMEs, this study provides a systematic literature review. Based on three theories (i.e. institutional isomorphism, the resource-based view, and contingency), the study uses descriptive and thematic content analytical tools to find triggers for (i.e. external and internal) and barriers to the adoption of EMPs by SMEs. The analysis shows that both coercive pressures (especially legislation and customers' demands) and internal resource capabilities serve as significant triggers for the adoption of EMPs by SMEs. This study also finds internal organisational barriers, including lack of resources, acting as the main barriers. Both descriptive and thematic content analysis suggest several avenues for future research in this area.

KEYWORDS

Environmental management practices, isomorphism, resource-based view, contingency theory, SMEs, triggers and barriers

1. INTRODUCTION

Small and medium-sized enterprises (SMEs) are responsible for a significant portion of the global environmental burden as they produce around 70% of the total global pollution and 60% of the total carbon emissions (Aragon-Correa et al., 2008). Moreover, it has been estimated that the collective environmental impact of SMEs outweighs the effects of large-scale firms, since SMEs represent ¾ of the global economy (Hillary, 2004; Horisch et al., 2015). Considering these adverse impacts of SMEs on the ecosystem together with the emergence of international attention towards certain alarming environmental issues, particularly over the past two decades, a burgeoning number of studies have been reported that explore various aspects of environmental management by SMEs (e.g., external environment drivers, internal resource capabilities, barriers and challenges). Accordingly, numerous studies have highlighted that external environmental drivers are the dominant triggers that underpin the environmental responsiveness of SMEs (Shahedul Quader et al., 2016; Witjes et al., 2017; Heras-Saizarbitoria et al., 2016).

In contrast, some studies have illustrated internal resource capabilities such as the sustainability awareness of the owner-manager (Graafland, Smid, 2016; Hosoda, 2018), strategic oriented decision making (Alberto & Erlantz, 2019; De Steur et al., 2020), and the efficacy of internal operation systems (Groen et al., 2012) to be the significant motivational drivers for the adoption of EMPs by SMEs. While some studies (e.g., de Steur et al., 2020) stress that the internal resource capabilities of SMEs are more crucial than the external pressures, others (e.g., Francesco et al., 2016) highlight that both internal and external forces are important.

Meanwhile, certain elements identified as internal resources appear to be barriers in some situations due to their diminished ability, weakness, or absence. For example, managerial barriers, lack of knowledge of employees, and low levels of strategic orientation can hinder the EMPs of SMEs (Singh

& Sarkar, 2019; Heras & Arana, 2010; Meath et al., 2016). Additionally, contingent factors, such as the dearth of resources based on the size of the business, cultural barriers, and lack of support from the government and external consultants have primarily been identified as barriers that hinder the adoption of environmentally sound practices by SMEs (Chan, 2011; Ferenhof et al., 2014; Hillary, 2004). Further, idiosyncratic characteristics of SMEs such as heterogeneous behaviour, both objective and subjective goals, informal decision-making processes, and lack of strategic orientation have made the adoption of EMPs differ from one business to another (Brammer et al., 2012; Hillary, 2004; Reyes-Rodríguez et al., 2016).

Given these circumstances, most research outcomes discussed above concerning the adoption of EMPs by SMEs are inconclusive and inconsistent due to their contradictory nature. Hence, it is still challenging to track the uniformity of research outcomes in order to come to a solid conclusion or to identify a clear pathway towards environmental management adoption by SMEs. Thus, a systematic review could synthesise both drivers and barriers towards the adoption of EMPs in SMEs in order to obtain a more integrated and holistic understanding. Additionally, the last systematic review of this research area was done in 2004 by Ruth Hillary, and thereafter, no reviews have been carried out over the past 17 years. Hence, a systematic review is timely, relevant, and imperative due to the rapid growth of both the environmental management discipline and the operations of SMEs as well as the dynamism of the external environment. Moreover, a periodic review of this research discipline to collect an inventory of all reported works to date through a systematic literature review that tracks and traces the current body of knowledge, has been encouraged by Norris and O'Dwyer (2004), and this review can then be used to decide on potential directions for future research.

In line with these claims, the main aim of this study is to systematically identify and critically review the literature related to the adoption of EMPs by SMEs to address the following questions:

1. What are the key external environmental drivers for the adoption of EMPs in SMEs?
2. What are the key internal organisational drivers for the adoption of EMPs in SMEs?
3. What are the challenges and barriers to the adoption of EMPs in SMEs?

The rest of this paper is organised as follows: In Section 2, the theoretical background is presented. Section 3 provides the methodology. Section 4 presents descriptive and thematic content analysis results under the findings and discussion. Finally, section 5 discusses future research directions and presents the conclusions.

2. THEORETICAL BACKGROUND

The primary purpose of presenting a theoretical framework is to theorise the drivers for and barriers to the adoption of EMPs by SMEs. Accordingly, three theories (i.e., institutional isomorphism, the resource-based view and contingency theory) are presented. However, it is also acknowledged that there is an overlap among some of the forces presented by these theories. For instance, drivers such as stakeholder pressure and employees' awareness have been identified under both institutional pressures and the resource-based view. Likewise, the study by Scott (2014) emphasises that forces of isomorphic pressure are interdependent and hence challenging to isolate. Therefore, the purpose of this section is to identify the forces pertaining to each isomorphic pressure and theory separately, by following the extant literature.

2.1 Institutional isomorphism

Institutional theory is often used to expound the external factors/ triggers that influence organisations to new practices/systems (Juárez-Luis et al., 2018). Studies show that different institutional pressures force businesses to adopt EMPs to ensure their legitimacy and make them fit into society and the economy (Bansal, 2005; Gunarathne et al., 2021; Hyatt & Berente, 2017; Windolph et al., 2014). Consequently, businesses pursue strategies that enable them to satisfy institutional actors in the field (Li, 2014). Past studies employing institutional theory have focused on businesses in different industries, geographical contexts, and scales to probe the impact of institutional pressures on adopting environmental responsive strategies (e.g., Gunarathne et al., 2021; Hyatt & Berente, 2017; Windolph et al., 2014). These studies highlight three types of institutional isomorphism: coercive, mimetic, and normative (DiMaggio & Powell, 1983). This article considers these isomorphic forces a theoretical framework to critically identify the external institutional pressures that trigger SMEs to adopt EMPs.

Coercive isomorphism exerts pressure on organisations to comply with defined rules, schemes, inferential settings, and norms existing in the social background (DiMaggio & Powell, 1983). Accordingly, certain forces of coercive isomorphism that impact on decisions to adopt EMPs have been recognised. These are; regulatory bodies (i.e., environmental regulations) and licence authorities; national and international standardisation agencies; and the coercive pressures of customers, stakeholders and parent companies (Bansal, 2005; Gunarathne et al., 2021; Windolph et al., 2014). Next, mimetic isomorphism occurs when organisations imitate other successful organisations in response to uncertainty (DiMaggio & Powell, 1983). Studies highlight that the formation of collaborative networks with peers' businesses, intensive competition and awareness of customers1 are mimetic pressures driving the EMPs of an organisation (Gunarathne et al., 2021). Normative isomorphism is primarily associated with the pressure exerted and guidance provided by professional bodies (DiMaggio & Powell, 1983). Normative pressures that persuade corporates to adopt EMPs have been identified as; guidance of environmental support initiatives, legitimacy needs, support from professional groups, trade unions and environmental policy in the organisational vision and/or mission statement (Bansal, 2005; Gunarathne et al., 2021; Windolph et al., 2014).

2.2. Resource-based view

Resource-based view shows that when firms have resources and capabilities, they embrace proactive environmental strategies that go beyond regulatory compliance (e.g., Hart, 1995; Russo & Fouts, 1997; Sharma, 2000). Generally, large firms are more likely to adopt proactive EMPs (Russo & Fouts, 1997; Sharma, 2000), while SMEs' may strive to pursue reactive environmental strategies to comply with regulatory requirements (e.g., Rutherfoord et al., 2000). However, SMEs can undertake a range of environmental strategies from reactive regulatory compliance to proactive pollution prevention when organisational possess supportive capabilities. These capabilities are shared vision, stakeholder management, and strategic proactivity (Aragon-Correa et al., 2008). The capability of ‘shared vision’ reflects the shared values and beliefs of organisational members and their collective contribution towards the achievement of the defined objectives and missions of a particular organisation (Aragon-Correa et al., 2008). Similarly, several studies (Lee et al., 2016; Williams & Schaefer, 2013) have emphasised that managers' values and engagement are significantly linked with the environmental responsiveness of SMEs. Further, rather than reactive approaches, strategic proactivity are considered a corporate capability that triggers proactive management strategies (Aragon-Correa et al., 2008). Additionally, employees' skills, capabilities and awareness are suggested as unique resources that persuade SMEs to adopt EMPs (Carrillo-Labella et al., 2020). On the other hand, the absence or weakening of these resources and capabilities might be a barrier to the adoption of EMPs for any business (e.g., fewer skills, less knowledge and/or sluggish attitudes of employees). Hence, the resource-based view is used by this study as a theoretical lens to find out organisational resources, which would lead businesses to adopt proactive EMPs in SMEs.

2.1.**Contingency theory**

Contingency theory has been applied to identify a broader perspective of contextual factors in adopting new systems such as organisational strategy, technology, structure and resources (Ismail & King, 2005; Melo & Garrido-Morgado, 2012). Contingency theory also suggests that an organisation's structure should be based on contextual factors such as environmental conditions and management style (Ismail & King, 2005). Interestingly, the strategic management literature has primarily considered environmental uncertainty as a contextual factor determining organisational strategies, including EMPs (Otley, 2016). Moreover, Melo and Garrido-Morgado (2012) identified contingency factors such as external and internal organisational culture, management strategies and resources availability, which can, directly and indirectly, influence EMPs of businesses. Uncertainty of the macro-environment in which a corporation operates is created by political, economic, legal and social elements, which may affect either trigger or barrier for corporate behaviour (Cristobal et al., 2019). In terms of the environmental management research, the weakness of the macro-environment element would cause to hinder the EMPs in the business landscape (Agan et al., 2013; Voukkali et al., 2017). Next, the size scale of corporates has been identified as a significant contingent factor, as it determines the resource capabilities, which cause the choice to adopt EMPs (Cristobal et al., 2019; McKeiver & Gadenne, 2005). Moreover, inter- nal culture is also a critical contingent factor in adopting management systems, including EMP (Balzarova & Castka, 2008; Buffa et al., 2018; Heras & Arana, 2010). Accordingly, various authors have recognised a significant and causal relationship between contingency factors and the adoption of EMPs in SMEs (e.g., Alonso-Paulí & Andre, 2015; Buffa et al., 2018; Cristobal et al., 2019). Given the fact, this study uses contingency theory to determine the barriers and challenges that SMEs encounter in adopting EMPs.

3. METHODOLOGY

In the development of the methodological section of this systematic literature review, five steps proposed by Tranfield et al. (2003) and Moher et al. (2009) were followed. They are (i) research definition, (ii) database selection, (iii) identification of keywords and terms, (iv) selection of compatible articles, and (v) data extraction and evaluation. Firstly, as presented in Section One, three research questions were defined. Then, three databases (i.e., Scopus, Web of Science[1], and Science Direct) were selected for the article search, as they have been often suggested as the most comprehensive scientific databases (Aghaei et al., 2013). Next, keywords were defined covering the core of the study. Some authors have used words such as environmental management systems, eco-management to reflect the meaning of the EMPs (e.g. Brammer et al., 2012; Buffa et al., 2018; Reyes-Rodríguez et al., 2016; Singh et al., 2015a; Singh et al., 2015b). Hence, this study used words namely, "environmental management practices/systems" OR "eco-management " AND "SMEs" to select articles. Subsequently, the search for articles was refined by selecting a certain period of time, 2000-2020, as the purpose of this study is to acquire a contemporary understanding of the phenomenon over the last two decades. Exclusion and inclusion criteria and also the article selection procedure are presented in details in Table 1 and Figure 1 respectively. Finally 54 articles were chosen to critically review for this study.

Although this is a relatively small number of papers, the current review is deemed comparable to similar reviews of Hillary (2004), Ferenhof et al. (2014) and Johnstone (2020), reflecting a paucity of research works focusing exclusively on SMEs.

< Insert **TABLE 1** here>

[1] In the Web of Science database search was limited to Science Citation Index, Social Sciences Citation Index, Arts & Humanities Citation Index, and Emerging Sources Citation Indexes.

< Insert **FIGURE 1** here>

Following Ki et al. (2020), two different analytical methods were used to synthesise the data extracted from selected articles in response to the research questions: a descriptive content analysis and a thematic content analysis. Descriptive content analysis focuses on the details related to years of publication, journals, study location, industry and the methodological choices of the research. Thematic content analysis was employed to explore the external triggers (using isomorphic pressures), internal triggers (using resources and capabilities), and barriers and challenges (using contingent factors, resources and capabilities). The manner of application of these three theories and descriptive content analysis to answer the research questions is presented in Figure 2.

< Insert **FIGURE 2** here>

4. FINDINGS AND DISCUSSION

4.1. Descriptive content analysis

Figure 3 demonstrates the number of articles published per year by different academic journals pertaining to EMPs in SMEs during the last two decades. The largest number of articles was recorded in the years 2016 (10, 18.5%) followed by 2020 (8, 14.8%), 2015 (6, 11.1%), and (4, 7.4%) in yers 2017-2019, respectively. In other years, on average, 1 to 3 papers have been published per year, except during the period 2000-2003. However, it is difficult to come to a firm conclusion regarding the actual trend of research across the selected period. The article screening process identified a significant trend in publication towards broader concepts such as CSR and sustainable development that also include environmental responsiveness. However, due to the specific focus of this study, these papers were excluded.

In terms of journals, as shown in Figure 3, most articles have been published in multi-disciplinary and sustainability-related journals such as the Journal of Cleaner Production (17, 31.4%), Corporate Social Responsibility and Environmental Management (12, 22.2%), Business Strategy and the Environment, (5, 9.24%), and sustainability (3, 5.6%%). However, there are some other journals based primarily on specific disciplines such as SMEs and entrepreneurship (e.g. International Small Business Journal), accounting (e.g., Journal of Accounting, Auditing and Accountability) and management (e.g., Journal of Management Control).

< Insert **FIGURE 3** here>

Moreover, the majority of the literature's geographical context was Europe (32, 62.74%), where Spain was the country that had been investigated the most (6, 11.76%). The continents of Asia, Oceania and Africa have been explored by 13 (25.5%), 5 (9.8%) and 1 (1.96%) papers, respectively. It was noted here that the African continent is lagging with respect to the scope of this research, and the South and North American continents have been entirely neglected. Interestingly, no cross-regional studies have been conducted comparing regions or continents. This is a pity, because it would have been interesting and relevant to identify the impact of social, economic, and cultural disparities between these

continents/countries on the adoption of EMPs (e.g. comparison between developed and emerging economies or western and eastern cultures).

In terms of research methods, the majority of articles (36, 66.6%) have employed quantitative approaches in their research design and analysis, followed by qualitative (16, 29.6%) and mixed methods (2, 3.7%), respectively, as shown in Figure 4. These suggest that more qualitative and mixed method research is needed to better understand the quantitative findings related to the EMPs of SMEs in the literature.

< Insert **FIGURE 4** here>

Considering the EMPs of SMEs in terms of the industries where they operated , thirty-three articles (61.1%) have not mentioned the industry they investigated. However, 6 (11%) and 3(5%) articles have revealed that their selected samples represent the manufacturing industry and a cross-section of the economy, respectively. This indicates that investigations of industry-specific EMPs of SMEs are scarce in the literature. Interestingly, service industries have been largely ignored except for the hotel sector.

4.2.Thematic content analysis

4.2.1. Coercive pressures as triggers

As presented in Table 2, this study identified four types of coercive forces that directly and indirectly impact on EMPs in SMEs. The identification of these pressures was guided by the prior literature presented in Section 2.

a) Pressures from environmental legislation:

According to Table 2, sixteen articles (29.6%) highlighted that the driver of compliance with national/regional resource-saving and conservation regulations is the dominant pressure on SMEs to adopt their EMPs. As highlighted by Shahedul Quader et al. (2016), recycling and waste management regulations are the most prominent environmental legislation pressures. However, these legislation pressures may depend on some contingent factors, such as the nature and size of the business, country, industry and the region where the company is located. Accordingly, the likelihood of adopting EMPs in SMEs may be subject to the extent of the institutional pressure along with so-called contingent factors (Chan, 2011; Burke & Gaughran, 2006; Hillary, 2004). For example, when the environmental legislation of a country is not strict enough to force businesses to comply with it, it does not motivate corporates to be environmentally responsive (Agan et al., 2013; Voukkali et al., 2017; Mohamed & Jamil, 2020; Chan, 2011; Singh & Sarkar, 2019). In such a situation, businesses tend only to focus on profit maximisation despite their environmental responsibilities (Voukkali et al., 2017; Mohamed & Jamil, 2020).

Some studies (Armas-Cruz et al., 2017; Triguero et al., 2016) have emphasised that the pressure of environmental legislation more often leads to a reactive approach to environmental management. These businesses often elude their ecological responsibility by delaying incorporating effective EMPs and dedicating the lowest possible investment to them, leading these corporates to merely comply with a legal requirement (Armas-Cruz et al., 2017). Balzarova and Castka (2008) pointed out that

businesses would have to adopt an optimistic and proactive approach even under situations of coercive pressure when they are required to comply with new legislation, in some cases. Moreover, an empirical study by Heras-Saizarbitoria et al. (2016) criticised the dark side of legal pressure to adopt EMPs by revealing that regulatory compliance is not necessarily and substantially integrated with the internal practices and procedures of businesses. Hence, the adoption of EMPs caused by regulatory pressure does not indicate a significant increment of the overall environmental performance of companies (Heras-Saizarbitoria et al., 2016). Additionally, Graafland and Smid (2016) pointed out that imposing regulatory compliance on SMEs' ecological responsibilities might cause an increase in the non-production overheads disproportionately, due to their small business size. Hence, the role of a responsible government should be raising awareness amongst SMEs on relatively easy ways of implementing EMPs with less cost by acknowledging their nature.

b) Pressure exerted by overall and specific stakeholders

The increasing pressure exerted by stakeholders on businesses to be eco-friendly is highlighted as another significant coercive pressure, and is discussed by seven articles (12.2%), as shown in Table 2. The force of stakeholders and the probability of adopting EMPs have diffused over the supply chain of a business from its suppliers to its end-users (Halila, 2007; Nawrocka, 2008; Witjes et al., 2017). However, Nowrocka (2008) explained that the motivation to adopt EMPs in the supply chain might be hindered by some specific circumstances, such as pre-signed manufacturing contracts/agreements with suppliers and customers, less flexibility to select suppliers and pre-selection of suppliers.

The growing demand of customers as one of the primary stakeholders exerting significant pressure on SMEs to adopt EMPs, has been cited by 15 articles (27.7%). Furthermore, some studies highlight that customers' demands might depend on the type of environmental management strategies that are to be implemented. For example, the environmental standard of ISO 14001 has a higher customer demand compared with environmental certifications such as Ekoscan (Heras & Arana, 2010) and Eco-lighthouse certifications (Granly & Welo, 2014). Moreover, Singh et al. (2015b) illustrated that most SMEs (within emerging economies, in particular) that are dealing with international markets had been forced to adopt ISO14001 as "a signalling device" to attract green customers across the global market.

c) Influence of the parent company:

Only two studies (3.7%) have identified the influence of the parent company as a coercive pressure on SMEs that are part of a multinational business or franchise.

d) International standards:

Considering compliance with international and national environmental standards, only two studies (3.7%) have discussed ISO 14001 as a coercive pressure. Nevertheless, Heras-Saizarbitoria et al. (2016) criticised the fact that ISO 14001 as an environmental management system does not sufficiently cover the broader definition of environmental issues such as energy management. Hence, they doubt the practicality of claiming ISO 14001 as a motivational factor in energy management. However, it should be noted that their study was conducted when the ISO 50001 energy management standard was not popular among SMEs.

< Insert **TABLE 2** here >

4.2.2. Mimetic pressures as triggers

The study identified two mimetic forces that drive the adoption of EMPs by SMEs, as shown in Table 3. They are a) collaboration with similar businesses in the industry and b) the environmental awareness of customers.

<

a. Collaboration with similar businesses in the industry

Forming a collaborative network with similar businesses to achieve environmental performance has been recognised as a substantial driver for adopting EMPs by SMEs. This has been cited by twelve studies (22.2%), as shown in Table 3. The literature highlights many benefits of forming networks for implementing EMPs, such as learning opportunities from competitors, possibilities to overcome common and specific barriers related to their industry and/or location (Chan, 2011; Halila & Tell, 2013), leading businesses towards innovative EMPs through teamwork (Lavia Lopez & Hiebl, 2014), increasing employee awareness, ensuring cost efficiencies, sharing resources and competencies and accelerating the implementation processes (Zobel, 2007; Chan, 2011; Granly & Welo, 2014; Halila, 2007; Graafland, 2018).

Despite these benefits, the literature also highlights some challenges that arise in the implementation of networking processes. They include extra time and documentation routines, and the inability to achieve specific operational targets or goals through collaboration (Halila, 2007). However, some authors suggest remedial actions such as appointing either firm-level or central network coordinators for collaborative arrangements (Zobel, 2007). Furthermore, Zobel (2007) highlights the need for better communication between central coordinators and business coordinators for effective outcomes from the collaborative processes.

b. Environmental awareness of customers:

This driver has been recognised by only 1 study (1.8%). According to Brammer et al. (2012), SMEs promote their environmental responsiveness by developing specific programmes to inform consumers on environmental issues.

Insert **TABLE 3** here >

4.2.3. Normative pressures as triggers

Environmental management awareness and training is considered a motivational factor for the adoption of EMPs by SMEs. However, acquiring knowledge can be challenging for SMEs due to their limited financial and human resources (Chan, 2011; Ferenhof et al., 2014; Halila, 2007; Nawrocka, 2008; Heras & Arana; 2010, Hillary, 2004). In these cases, collaboration with external networks such as consultancy firms, trade unions, and environmental support initiatives would be a feasible way of acquiring the requisite knowledge/information for resource-deprived organisations,

such as SMEs (Johnstone, 2020). Accordingly, six types of normative pressures have been identified in this study, as shown in Table 4.

The highly cited normative pressures recorded by 8, (14.8%) and 5, (9.26%) articles, respectively, are the drivers of government supporting programmes and guidance from environmental initiatives. Professional consultancies, trade union support, and legitimisation motives have been cited by only one paper (1.8%), each as a potential trigger. In line with the stimulus of legitimisation of business activities, Granly and Welo (2014) highlighted that Eco-lighthouse certification has higher demand than ISO 14001 as it directs SMEs to reduce their operational cost through waste management procedures. Finally, two articles (3.7%) have reported that the demonstration of environmental responsiveness in the vision and mission statements of companies is considered to be a powerful trigger.

< Insert **TABLE 4** here >

4.2.4. Internal resources and capabilities as triggers

As shown in Table 5, four types of core resources and capabilities that act as internal triggers for the adoption of EMPs by SMEs were identified. They are managers' awareness/attitudes, proactive strategic management, employees' awareness/skills and gender motivation.

a) The manager as a unique resource

The presence of cognitive characteristics in an owner/manager, such as beliefs, values, norms, as well as his/her knowledge and awareness of environmental responsiveness, have been cited as triggers for the adoption of EMPs by 15 (27.7%) and 4 (7.4%) studies, respectively. This is primarily because SMEs possess a centralised decision-making process where the owner is the ultimate authority. Therefore, the literature highlights how the environmental responsiveness of SMEs can be enhanced by capitalising on this unique characteristic. For instance, Bradford and Fraser (2008) emphasised the importance of awareness-raising programs aimed at SMEs (for example, mandatory free audits on how to improve environmental impacts). Moreover, Johnson (2015) highlighted the need to emphasise economic benefits in these awareness creation programmes, benefits such as waste minimisation, energy saving and reputational gains, to inspire owners' perceptions of EMPs.

b) Proactive management strategies

Under this theme, eight different management strategies were identified, as shown in Table 6. Corporate reputation is the most cited strategy (14, 25.9%) followed by competitive advantage (8, 14.8%), economic benefits (6, 11.1%), strengthening stakeholders' relationships (4, 7.4%), and customer satisfaction (3, 5.5%). The other three benefits (i.e., CSR, better access to markets and employee safety) have been discussed by two papers (3.7%).

The literature reports some contradictions between the purposes of management strategies and the real purpose of saving the ecosystem in relation to corporate reputation and CSR (Heras-Saizarbitoria et al., 2016). Further, Santos et al. (2016) note that some Portuguese SMEs have not yet obtained environmental management certificates such as ISO 14001 since they believe that these ecological certifications exist merely for greenwashing purposes without improving environmental performance.

Moreover, studies show mixed results related to the adoption of ISO 14000. For instance, Jamali (2010) and Castka and Prajogo (2013) record a slight improvement in environmental outcomes while others (Ferenhof et al., 2014; Singh et al., 2015a; Ferreira Rino & Salvador, 2017) report a positive impact from the adoption of the ISO 14001 standard. However, Graafland (2018) provides a new angle to this debate by suggesting that the adoption of ISO 14001 is a mediator to persuade SMEs to improve their environmental performance. Since SMEs are often resource-constrained, needing guidance/support from external parties to manage their environmental issues, ISO14001 certification might be acting as a trigger for the SME to collaborate and develop its EMPs.

c) Employees' awareness and skills:

Seven studies (12.9%) stressed that SMEs are benefited by intangible resources (i.e., employees' knowledge, awareness, enthusiasm, behaviour, shared beliefs and attitudes, and good relationships with leadership) in the adoption of EMPs. Likewise, studies highlight the need for collaboration between employees and management in order to set goals for the environmental management process. This is because collaboration can enhance employees' favourable attitudes and support by making them aware of their role in the EMP, which is a vital factor (Balzarova & Castka, 2008; Voukkali et al., 2017). Some reported works (e.g., Santos et al., 2011; Campos, 2012) demonstrated a relatively good employee engagement/contribution towards EMPs in SMEs that have obtained environmental certifications, such as ISO14001. The certification procedure can lead businesses to train their employees, set performance indicators, and restructure their organisations to create a formal atmosphere in which to achieve the anticipated environmental performance.

d) Gender and age motivation:

The gender and the age of the owner/managers have been recognised as dominant factors for the adoption of EMPs in SMEs by only two studies (3.7%). According to the literature, women and young leaders are more favourable towards adopting EMPs (Graafland, 2020; Lewis et al., 2015). That is because most women are more sensitive to communal values that reflect their concern for improving the quality of life in society through the CSR initiatives of the businesses. Moreover, women's leadership style is more participative, democratic, and communal. Their ability to connect and work with a broader range of stakeholders distinguishes them significantly from male leaders (Lewis et al., 2015). This ability would bring diverse stakeholders' perspectives into the businesses to be considered when forming long-term sustainability strategies (Lewis et al., 2015). In addition, Graafland (2020) stressed that young leaders are more active and productive in their leadership styles than older leaders.

< Insert **TABLE 5** here >

4.2.5. Contingent factors acting as barriers

The review work of Hillary (2004) splits the obstacles to the adoption of EMPs by SMEs into two subcategories, namely, internal organisational barriers and external environmental barriers. Accordingly, this study also categorised the identified barriers as external and internal obstacles (see Table 6).

a) Internal organisational barriers:

Our analysis shows that internal organisational barriers are the most cited barriers by studies. The most significant internal barrier reported is the lack of availability of resources, which has been mentioned by 22 articles (40.7%). Moreover, several other internal barriers such as lack of employee engagement owing to their low levels of knowledge (15, 27.7%), cultural issues (5, 9.26%), limited availability of technology (5, 9.26%), size of the business (4, 7.4%), low levels of strategic orientation (3, 5.5%), and insufficient benefits (1, 18%), have been pointed out. The literature suggests that these internal barriers are interconnected and interdependent. Some studies discuss remedial actions to overcome these barriers. For instance, Voukkali et al. (2017) suggest that lack of employee support can be substantially minimized through economic incentives. Likewise, several studies suggested improving the awareness of owners as the most feasible solution for increasing environmental performance of SMEs (e.g., McKeiver & Gadenne, 2005; Graafland & Smid, 2016).

Another strand of the literature highlights how the limited endowment of resources can lead to a reactive response to the EMPs, when formal and sophisticated tools are not used (Ferenhof et al., 2014). In other words, due to the high cost, limited technological orientation, and the lack of skills/knowledge of businesses (Alonso-Paulí & Andre, 2015), SMEs are compelled to adopt a reactive approach towards EMPs. Therefore, the study by Armas-Cruz et al. (2017) stressed that the size of the business is one of the main determinants of the choice of the environmental management approach of SMEs.

b) External environmental barriers:

The high cost of certification is the most cited external barrier (7, 12.9%). Next, low levels of support and guidance from the relevant institutes, local barriers, and industrial barriers are the other external barriers that have been cited by 4 (7.4%), 3 (5.5%), and 3 (5.5%) articles, respectively, as shown in Table 7. The common local/regional barriers represent factors such as high waste disposal costs, high raw material costs, less customer requirements, and the type of the industry (e.g., manufacturing vs service). It is highlighted that the manufacturing sector is intrinsically stimulating the adoption of EMPs due to pollution intensity (Singh et al., 2015b). In contrast, an empirical study by Armas-Cruz et al. (2017) has criticised most SMEs operating in the industrial sector because they have been neglecting their environmental responsibility despite intensive pollution.

< Insert **TABLE 6** here >

5. FUTURE RESEARCH DIRECTIONS AND CONCLUSIONS

This study provides a structured understanding of the drivers for and barriers to the adoption of EMPs by SMEs. The literature analysis shows that regulatory pressure (i.e., external environmental pressure) is the most cited trigger, followed by the coercive force of customers. Likewise, owner-managers' awareness and attitudes to environmental responsiveness (i.e., internal resource availability) has been reported as a significant trigger. Therefore, it can be seen that both external and internal forces are seemingly crucial for the adoption of EMPs by SMEs. However, some internal resources might act as either triggers or barriers subject to their strengths or weakness (e.g., skills and attitudes of employees and owner-managers). Likewise, in some cases, external pressures might have an ability to stimulate the internal factors of businesses, and the combination of these two motivational factors could lead firms to adopt EMPs proactively instead of taking a reactive approach. According to these studies, the significant barriers to the adoption of EMPs by SMEs are related to

internal organisational hurdles such as resource constraints, followed by lack of employee engagement and employees' sluggish attitudes. Excessive certification cost is the most cited impediment by the reviewed articles in terms of external environmental barriers.

The descriptive and thematic analyses of this study highlight several avenues for future research. The thematic analysis shows that drivers of two institutional isomorphic pressures, i.e., mimetic and normative pressures, have been subject to limited investigations compared with coercive pressure. Hence, Aragon-Correa et al. (2008) have recommended more research based on the role of social/normative paradigms for the environmental responsiveness of SMEs. While coercive pressures can be more dominant in the SME space, in future studies, it will be interesting to analyse why mimetic and normative pressures do not help SMEs significantly to adopt EMPs. Also, Heras-Saizarbitoria et al. (2016) pointed out that regulatory pressure, in general, leads businesses to adopt reactive environmental strategies and, more often than not, they end up with unnecessary non-production overheads with diminished ecological performance. Hence, future research investigating the primary trigger/s that enhances the efficacy of the environmental responsiveness of SMEs would be timely and relevant. Additionally, it is imperative to probe the impacts of emerging concepts and institutional pressures on the adoption of EMPs by SMEs to further enrich existing knowledge (e.g., circular economy, cleaner production, United Nations' sustainable development goals, and implications of the Paris agreement pledged in 2016). The existing body of literature does not shed sufficient light on these imperatives since they are still emerging. Furthermore, the impact of internal resource capability on driving SMEs to adopt environmentally friendly practices is an under-researched field except for owner-managers' awareness and attitudes. More research should be carried out to investigate the impact of the demographic characteristics of SME leadership (for instance, age, gender, education, and cultural and religious background) on the adoption of EMPs. Moreover, researchers have highlighted that most SMEs perceive no clear benefit in engaging in environmentally responsive activities, that is, many businesses are still skeptical about potential cost savings and market benefits accompanying EMPs (Kehbila et al., 2009). Therefore, policy-makers and practitioners should be encouraged to make businesses aware of the prevailing environmental legislation and its repercussions. Also, providing support for, and giving recognition to, businesses that are engaging in EMPs and fostering voluntary initiatives that promote environmental self-regulation should be conducted by the relevant authorities. On the scholars' side, future research should be aligned to ascertaining which particular EMPs yield a greater increase in economic performance in order to motivate SMEs for more environmental strategies.

The descriptive analysis highlights that Europe is the most-investigated continent, whereas North and South America have been completely neglected. Moreover, Africa and other emerging economies are lagging far behind in terms of these studies. Given the ecological importance and crucial role that SMEs play in these economies and regions, more studies are needed to expand the understanding on environmental management of SMEs globally. Meanwhile , cross-continent/regional research should be encouraged to probe into the impact of social, cultural, and economic disparities on the adoption of EMPs by SMEs (for example, a comparison between developed and emerging economies). Moreover, the findings revealed that research on the EMPs of SMEs has been dominated by quantitative research approaches that have adopted a positivistic research paradigm. Here, most researchers have developed deterministic models focusing on the reliability and validity of research methods. Hence, the existing body of literature lacks a thorough investigation of the contextual factors using interpretive research approaches. This opens avenues for the employment of several research

methods such as the case study, the ethnographic approach and grounded theory research. Besides, it was observed that service-based SMEs had been subject to minimal investigations, despite their significant role in sustainable development in both emerging and developed economies. This is particularly important in resource-intensive and high polluting service sectors such as energy, health, transportation, hospitality, agriculture and waste management (Ritchie and Roser, 2020).

The findings of this study are not without some limitations. In this study, only English peer-reviewed articles were selected; non-English and other articles such as conference papers and book chapters were not considered. There could be more information about drivers for and barriers to EMP adoption by SMEs in non-English articles and other literature sources. In addition, this study was limited only to the SME context, explicitly dealing with environmental management. Accordingly, to capture the nuances of ecological management, broader concepts (i.e., quality management, health and safety systems, the circular economy, cleaner production, sustainability, and corporate social responsibility) were neglected. However, the recent trend observed in the articles reviewed indicates a greater propensity to integrate environmental management with these broader concepts or to position themselves in the larger realm of corporate sustainability. Hence, there is a greater probability of identifying more drivers and barriers to the adoption of EMPs by SMEs embedded within these other related aspects.

References

Agan, Y., Acar, M., & Borodin, A. (2013). Drivers of environmental processes and their impact on performance: A study of Turkish SMEs. *Journal of Cleaner Production, 51,* 23–33.

Aghaei, C. A., Salehi, H., Yunus, M., Farhadi, H., Fooladi, M., Farhadi, M., & Ale Ebrahim, N. (2013). A comparison between two main academic literature collections: Web of Science and Scopus databases. *Asian Social Science, 9(5),* 18–26.

Alberto, D. J., & Erlantz, A. (2019). The Adoption of Environmental Management Systems Based on ISO 14001, EMAS, and Alternative Models for SMEs: A Qualitative Empirical Study. *Sustainability, 11,* 2-17.

Alonso-Paulí, E., & Andre, F. J. (2015). Standardised environmental management systems as an internal management tool. *Resource and Energy Economics, 40,* 85-106.

Aragon-Correa, J. A., Hurtado-Torres, N., Sharma, S., & García-Morales, V.J. (2008). Environmental strategy and performance in small firms: a resource-based perspective. *Journal of Environmental Management, 86(1),* 88-103.

Arana, I. G., (2010). Alternative models for environmental management in SMEs: the case of ekoscan vs. ISO 14001. *Journal of Cleaner Production, 18(8),* 726-735.

Armas-Cruz, Y., Gil-Soto, E., & Oreja-Rodríguez, J. R. (2017). Environmental management in SMEs: organizational and sectoral determinants in the context of an Outermost European Region. *Journal of Business Economics Management, 18(5),* 935-953.

Balzarova, M. A., & Castka, P., (2008). Underlying mechanisms in the maintenance of ISO 14001 environmental management system. *Journal of Cleaner Production. 16(18),* 1949-1957.

Bansal, P. (2005). Evolving sustainably: A longitudinal study of corporate sustainable development. *Strategic Management Journal, 26,* 197–218.

Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management, 17(1*), 99-120.

Battilana, J., & Casciaro, T., (2012). Change agents, networks, and institutions: A contingency theory of organizational change, *Academy of Management Journal 55(2),* pp. 381-398.

Bos-Brouwers, H. E. J. (2010). Corporate sustainability and innovation in SMEs: evidence of themes and activities in practice. *Business strategy and the environment, 19(7),* 417-435.

Bradford. J., & Fraser, E. D. G. (2008). Local authorities, climate change and small and medium enterprises: Identifying effective policy instruments to reduce energy use and carbon emissions. *Corporate Social Responsibility and Environmental Management, 15(3),* 156–172.

Brammer, S., Stefan, H., & Marchant, K. (2012). Environmental management in SMEs in the UK: Practices, Pressures and Perceived Benefits. *Business Strategy and the Environment, 21,* 423–434.

Buffa, F., Franch, M., & Rizio, D. (2018). Environmental management practices for sustainable business models in small and medium sized hotel enterprises. *Journal of Cleaner Production, 194*. 1-21.

Burke, S., & Gaughran, W. F. (2006). Intelligent environmental management for SMEs in manufacturing. Robot. *Computer Integrated Manufacturing, 22(5),* 566-575.

Campos, L. M. (2012). Environmental management systems (EMS) for small companies: a study in southern Brazil. *Journal of Cleaner Production, 32,* 141-148.

Cantele, S., & Zardini, A. (2020). What drives small and medium enterprises towards sustainability? Role of interactions between pressures, barriers, and benefits. *Corporate Social Responsibility and Environmental Management, 27*, 126–136.

Cardoso, M. M., Vivaldini, M., & Oliveira, Otávio. (2020). Production and supply-chain as the basis for SMEs' environmental management development: A systematic literature review. *Journal of Cleaner Production, 273*, 210-224.

Carrillo-Labella, R., Fort, F., & Parras-Rosa, M. (2020). Motives, Barriers, and Expected Benefits of ISO 14001 in the Agri-Food Sector. *Sustainability, 12(1724),* 1-17.

Chan, E. S. (2011). Implementing environmental management systems in small-and medium-sized hotels: Obstacles. *Journal of Hospitality & Tourism Research, 35(1),* 3-23.

Christine, D., Yadiati, W., Afiah, N., & Fitrijanti, T. (2019). The Relationship of Environmental Management Accounting, Environmental Strategy and Managerial Commitment with Environmental Performance and Economic Performance. *International Journal of Energy Economics and Policy, 9,* 458-464.

Cristóbal, F. R., María Soledad, C. P., Paulina, S. A., & María-Del, M. A. A. (2019). Green Practices in Hospitality: A Contingency Approach. *Sustainability. 11*(*3737).* 1-24.

De-Steur, H., Temmerman, H.,Gellynck, X., & Canavari, M. (2020). Drivers, adoption, and evaluation of sustainability practices in Italian wine SMEs. *Business Strategy & Environment, 29,* 744-762.

DiMaggio, P., & Powell, W. (1983), The iron cage revisited: institutional isomorphism and collective rationality in organisational fields. *American Sociological Review, 48(2),* 147-160.

Ferenhof, H.A., Vignochi, L., Selig, P.M., Lezana, A.G.R., & Campos, L.M. (2014). Environmental management systems in small and medium-sized enterprises: an analysis and systematic review. *Journal of Cleaner Production, 74,* 44-53

Fiedler, F.E., (1964). A Contingency Model of Leadership Effectiveness, *Journal for Advances in Experimental Social Psychology 1 (12),* pp. 149-190.

Francesco, T., Natalia, M.G., Filippo, C., Emilio, P., & Fabio, I. (2016), Factors Affecting Environmental Management by Small and Micro Firms: The Importance of Entrepreneurs' Attitudes and Environmental Investment. *Corporate Social Responsibility &. Environmental Management, 23*, 373–385.

Graafland, J. (2018). Women in management and sustainable development of SMEs: Do relational environmental management instruments matter? *Corporate Social Responsibility &. Environmental Management, 27*, 2320–2328.

Graafland, J., & Smid, H. (2016). Environmental impacts of SMEs and the effects of formal management tools: evidence from EU's largest survey. *Corporate Social Responsibility &. Environmental Management, 23(5)*, 297-307.

Graafland, J., Van de Ven, B., & Stoffele, N. (2003). Strategies and instruments for organising CSR by small and large businesses in the Netherlands. *Journal of Business Ethics 47(1)*, 45–60.

Granly, B.M., & Welo, T. (2014). EMS and sustainability: experiences with ISO 14001 and eco-lighthouse in Norwegian metal processing SMEs. *Journal of Cleaner Production*, 64, 194-204.

Groen, B.A., Van-de-Belt, M., & Wilderom, C.P. (2012). Enabling performance measurement in a small professional service firm. *International Journal of Production & Performance Management, 6(8)*, 839-862.

Gunarathne, A.D.N., Lee, K.H., & Hitigala, K.P.K. (2021). Institutional pressures, environmental management strategy, and organizational performance: The role of environmental management accounting. *Business Strategy & Environment, 30*: 825–839.

Halila, F. (2007). Networks as a means of supporting the adoption of organisational innovations in SMEs: the case of environmental management systems (EMSs) based on ISO 14001. *Corporate Social Responsibility &. Environmental Management, 14(3)*, 167-181.

Hart, S.L. (1995). A natural-resource-based view of the firm. *Academy of Management Review 20*, pp. 874–907.

Hemingway, C., & Maclagan, P. (2004). Managers' personal values as drivers of corporate social responsibility. *Journal of Business Ethics, 50(1)*, 33–44.

Heras-Saizarbitoria, I., Arana, G., & Boiral, O. (2016). Outcomes of Environmental Management Systems: the Role of Motivations and Firms' Characteristics. *Business Strategy and the Environment, 25*, 545–559.

Hillary R. (1999) Evaluation of study reports on the barriers, opportunities and drivers for small and medium sized enterprises e the adoption of environmental management systems. Report

Hillary, R. (2004). Environmental management systems and the smaller enterprise. *Journal of Cleaner Production, 12(6)*, 561-569.

Horisch, J., Johnson, M.P., Schaltegger, S., 2015. Implementation of sustainability management and company size: a knowledge-based view. *Business Strategy and the Environment*. 24 (8), 765-779.

Hyatt, D. G., & Berente, N. (2017). Substantive or symbolic environmental strategies? Effects of external and internal normative stakeholder pressures. *Business Strategy and the Environment, 26(8)*, 1212–1234.

Ismail, N. A. and King, M. (2005), 'Firm Performance and AIS Alignment in Malaysian SMEs',

***International Journal of Accounting Information Systems*, Vol.6, No.4, pp.241- 259.**

Jamali, D., Zanhour, M., & Keshishian, T. (2009). Peculiar strengths and relational attributes of SMEs in the context of CSR. *Journal of Business Ethics 87*, 355–377.

Johnson, M.P., 2017. Knowledge acquisition and development in sustainability oriented small and medium-sized enterprises: exploring the practices, capabilities and cooperation. *Journal of Cleaner Production, 142,* 3769-3781.

Johnson. (2015). Sustainability management and small and medium-sized enterprises: managers' awareness and implementation of innovative tools**,** *Corporate Social Responsibility &. Environmental Management, 22(5),* 271-285.

Johnstone, Leanne. (2020). The construction of environmental performance in ISO 14001-certified SMEs. *Journal of Cleaner Production, 263,* 121-138.

Johnston, M (2013), *Mimetic, Coercive and Normative Influences and the Decision of National Sport Organisations to Bid for World Championship Events*. MBus. thesis, Auckland university of Technology.

Ki, C.W., Chong, S.M., & Ha-Brookshire, J.E. (2020). How fashion can achieve sustainable development through a circular economy and stakeholder engagement: A systematic literature review. *Corporate Social Responsibility and Environmental Management, 27*(*6),* 2401-2424.

Lavia, LO., & Hiebl, M.R. (2014). Management accounting in small and medium-sized enterprises: current knowledge and avenues for further research. *Journal of Management. Accounting Research, 27(1),* 81-119.

Lee, K.H., Herold, D. M., & Yu, A.L. (2016). Small and Medium Enterprises and Corporate Social Responsibility Practice: A Swedish Perspective. *Corporate Social Responsibility and Environmental Management, 23,* 88– 99.

Lepoutre, J., & Heene, A. (2006). Investigating the impact of firm size on small business social responsibility: a critical review. *Journal of Business Ethics, 67(3),* 257–273.

Li, Y.N. (2014). Environmental innovation practices and performance: Moderating effect of resource commitment. *Journal of Cleaner Production, 66,* 450–458.

Marco-Fondevila. M., Moneva, A.J.M., & Scarpellini, S. (2018). CSR and green economy: Determinants and correlation of firms' sustainable development. *Corporate Social Responsibility and Environmental Management, 25,* 756–771.

McKeiver, C., & Gadenne, D. (2005). Environmental management systems in small and medium businesses. *International Small Business Journal, 23(5),* 513–537.

Meath, C., Linnenluecke, M., & Griffiths, A. (2016). Barriers and motivators to the adoption of energy savings measures for small- and medium-sized enterprises (SMEs): the case of the ClimateSmart Business Cluster program. *Journal of Cleaner Production, 112,* 3597-3604.

Melo, T., & Garrido-Morgado, Á. (2012). Corporate Reputation: A Combination of Social Responsibility and Industry. *Corporate Social Responsibility and Environmental Management. 19(1),* pp. 11-31.

Mohamed. R., & Jamil, C.Z.M. (2020). The influence of environmental management accounting practices on environmental performance in small to-medium manufacturing in Malaysia, *International Journal of Environment and Sustainable Development, 19(4),* 378 – 392.

Nawrocka, D. (2008). Environmental supply chain management, ISO 14001 and RoHS. How are small companies in the electronics sector managing? *Corporate Social Responsibility and Environmental Management, 15(6),* 349-360.

Norris, G., & O'Dwyer, B. (2004). Motivating socially responsive decision making: the operation of management controls in a socially responsive organisation. *British Accounting Review, 36(2),* 173-196.

Oliver, C. (1991). Strategic Responses to institutional process, *Academy of Management Review, 16(1),* 145-179.

Qian, W., Burritt, R., & Chen, J. (2015). The potential for environmental management accounting development in China. *Journal of Accounting & Organizational Change, 11(3),* 406 -428.

Otley, D.T. (2016), 'The contingency theory of management accounting and control: 1980-2014', *Management Accounting Research*, vol. 31, pp. 45-62.

Reyes-Rodríguez, J.F., John P.U., & Henning, M. (2016). Corporate Environmental Sustainability in Danish SMEs: A Longitudinal Study of Motivators, Initiatives, and Strategic Effects. *Corporate Social Responsibility &. Environmental Management, 23,* 193–212.

Russo, M. V., & Fouts, P. A. (1997). A resource-based perspective on corporate environmental performance and profitability. *Academy of Management Journal, 40*, pp. 534-545.

Rutherfoord, R., Blackburn, R.A., & Spence, L.J. (2000). Environmental management and the small firm: an international comparison. *International Journal of Entrepreneurial Behaviour and Research 6,* pp. 310–325.

Santos, G., Mendes, F., & Barbosa, J. (2011). Certification and integration of management systems: the experience of Portuguese small and medium enterprises. *Journal of Cleaner Production, 19(17),* 1965-1974.

Santos, G., Rebelo, M., Lopes, N., Alves, M.R., Silva, R. (2016). Implementing and certifying ISO 14001 in Portugal: motives, difficulties and benefits after ISO 9001 certification. *Total Quality. Management and Business Excellence, 27 (11-12),* 1211-1223.

Scott, W.R. (2014). Institutions and Organisations: Ideas, Interests, and Identities (4a). *London: Sage Publications Ltd*.

Shahedul-Quader, M., Kamal, M.M., & Hassan, A.E. (2016). Sustainability of positive relationship between environmental performance and profitability of SMEs: a case study in the UK. *Journal of Enterprising Communities People Places Global Economics, 10(2),* 138-163.

Sharma, S. (2000). Managerial interpretations and organizational context as predictors of corporate choice of environmental strategy. *Academy of Management Journal 43,* pp. 681–697.

Singh, M., Brueckner, M., & Padhy, P.K. (2015b). Environmental management system ISO 14001: effective waste minimisation in small and medium enterprises in India. *Journal of Cleaner Production, 102,* 285-301.

Singh, N., Jain, S., & Sharma, P. (2015a). Motivations for implementing environmental management practices in Indian industries. *Ecological and Economics, 109,* 1-8.

Singh, P.K., & Sarkar, P. (2019). A framework based on fuzzy AHP-TOPSIS for prioritising solutions to overcome the barriers in the implementation of eco-design practices in SMEs, *International Journal of Sustainable Development & World Ecology, 26(6),* 506-521.

Stubblefield-Loucks, E., Martens, M.L., & Cho, C.H. (2010). Engaging small-and medium sized businesses in sustainability. *Sustainability Accounting and Management Policy, 1(2),* 178-200.

Tranfield, D., Denyer, D., & Smart, P., 2003. Towards a methodology for developing evidence informed management knowledge by means of systematic review. *British Journal of Management, 14,* 207–222.

Triguero, A., Moreno-Mondéjar, L., & Davia, M.A. (2016). Leaders and Laggards in Environmental Innovation: An Empirical Analysis of SMEs in Europe. *Business Strategy and the Environment, 25*, 28– 39.

Voukkali, I., Loizia, P., Pociovalisteanu, D.M., & Zorpas, A.A. (2017). Barriers and difficulties concerning the implementation of an environmental management system in a bakery-confectionary industry in Cyprus for 8 years. *Environmental Processes, 4(1),* 263-275.

Williams, S., & Schaefer, A. (2013). Small and medium sized enterprises and sustainability: managers' values and engagement with environmental and climate change issues. *Business Strategy and the Environment, 22(3),* 173–186.

Windolph, E.S., Schaltegger, S., & Herzig, C. (2014), Implementing corporate sustainability: What drives the application of sustainability management tools in Germany?, *Sustainability Accounting, Management and Policy Journal, 5(4),* 378-404.

Witjes, S., Vermeulen, W.J., & Cramer, J.M. (2017). Exploring corporate sustainability integration into business activities. Experiences from 18 small and medium sized enterprises in The Netherlands. *Journal of Cleaner Production, 153,* 528-538.

Wong, C.W.Y., Wong, C.Y., & Boon-itt, S. (2020). *Environmental management systems, practices and outcomes: Differences in resource allocation between small and large firms. International Journal of Production Economics, 228,* 235-251.

TABLE 1 Inclusion and exclusion criteria of the article selection procedure

Criteria	Procedure applied
Inclusion criteria	
• Keywords searched	"environmental management practices/systems" OR "eco-management practices/system" AND "SMEs"
• Time scale	2000-2020
• Language	English
• Document type	Peer-reviewed articles
• Databases	Scopus, Web of Science, and Science Direct
• Keywords in	Article title, abstract, and keywords
Exclusion criteria	
• Document types	Book chapters and conference papers
• Interdisciplinary concepts	Socio-environmental performance, corporate social responsibility (CSR), circular economy, cleaner production
• Out of scope due to	
- Size	Articles not clear of the targeted business group and comparative studies (i.e., large and small business, large business vs SMEs)
- Subject matter	Articles dealing with broader concepts such as quality management and/or health and safety systems
- Relevance	Articles not discussing the drivers and barriers of the adoption of EMP of SMEs.

TABLE 2 Countries investigated by selected articles

TABLE 2 Coercive pressures for the adoption of EMPs by SMEs

Coercive pressures	# of cites (% of citations)	Reported works
Pressure from environmental legislations	16 (29.6%)	Cantele & Zardini, (2020); Alberto & Erlantz, (2019); Francesco et al., (2016); Brammer et al., (2012); McKeiver & Gadenne, (2005); Burke & Gaughran, (2006); Balzarova & Castka, (2008); Nawrocka, (2008); Heras & Arana, (2010); Ferenhof et al., (2014); Singh et al., (2015b); Graafland & Smid, (2016); López-Gamero et al., (2016); Witjes et al., (2017); Christine et al., (2019); Johnstone, (2020)
Pressure of overall and specific stakeholders		
- *Overall stakeholder pressure*	7 (12.2%)	Marco-Fondevila et al., (2018); Halila, (2007); Nawrocka, (2008); Witjes et al., (2017); Shahedul Quader et al., (2016); Singh et al., (2015b); Johnstone, (2020)
- *Coercive pressure of customer*	15 (27.7%)	Agan et al., (2013); Triguero et al., (2016); Alberto & Erlantz, (2019); Marco-Fondevila et al., (2018); Francesco et al., (2016); McKeiver & Gadenne, (2005); Heras & Arana, (2010); Ferenhof et al., (2014); Granly & Welo, (2014); Singh et al., (2015b); Graafland & Smid, (2016); Shahedul Quader et al., (2016); Witjes et al., (2017); Halila, (2007); Johnstone, (2020)
Parent company's influence	2 (3.7%)	Alberto & Erlantz., (2019); Witjes et al., (2017)
Environmental standards	2 (3.7%)	Heras-Saizarbitoria et al., (2016); Singh et al. (2015b)

TABLE 3 Mimetic pressures for the adoption of EMPs by SMEs

Mimetic pressure	# of cites (% of citations)	Reported works
Collaboration with similar businesses in the industry	12 (22.2%)	Halila, (2007); Graafland, (2018); Chan, (2011); Halila & Tell, (2013); Triguero et al., (2016); Zobel, (2007) Granly & Welo, (2014); Hörisch et al., (2015); Graafland & Smid, (2016); Cardoso et al., (2020), Johnstone, (2020); Lewis et al., (2015)
The environmental awareness of customers	1 (1.8%)	Brammer et al., (2012)

TABLE 4 Normative pressures for the adoption of EMPs by SMEs

Normative pressure	# of cites (% of citations)	Reported works
Guidance from environmental support initiatives	5 (9.26%)	Burke & Gaughran, (2006); Graafland & Smid, (2016); Heras-Saizarbitoria et al., (2016); Cardoso et al., (2020); Johnstone, (2020)
Professional consultancies	1 (1.8%)	Heras-Saizarbitoria et al., (2016)
Government support programmes	8 (14.8%)	Graafland & Smid, (2016); Geng et al., (2021); Ferenhof et al., (2014); Hörisch et al., (2015); Johnstone, (2020); Kehbila et al., (2009); Meath et al., (2016); Agan et al., (2013)
Trade union supports	1 (1.8%)	Graafland & Smid, (2016)
Legitimization motives	1 (1.8%)	Granly & Welo, (2014)
Oganizational vision and/or mission statement	2 (3.7%)	Brammer et al., (2012); Witjes et al., (2017)

TABLE 5 Internal resources for the adoption of EMPs by SMEs

Internal resources	# of cites (% of citations)	Reported works
Managers as a unique resource		
- *Managers' values, attitudes and norms*	15 (27.7%)	Schaefer et al., (2018); Spence, (2016); Stubblefield Loucks et al., (2010); Halila, (2007); Santos et al.,(2016); McKeiver & Gadenne, (2005); Hemingway & Maclagan, (2004); Granly & Welo, (2014); Aragon-Correa et al., (2008); Bos-Brouwers, (2010); Francesco et al., (2016); Reyes-Rodríguez et al., (2016); Johnson, (2015); Hörisch et al., (2015); Witjes et al., (2017)
- *Awareness, knowledge and competence of owner-manager*	4 (7.4%)	McKeiver & Gadenne, (2005); Graafland & Smid, (2016); Johnstone, (2020); Brammer et al., (2012)
Proactive management strategies		
- *Competitive advantage*	8 (14.8%)	Alberto & Erlantz,(2019); Singh et al., (2015a); Wong et al., (2020); McKeiver & Gadenne, (2005); Shahedul Quader et al., (2016); Meath et al., (2016); Cantele & Zardini, (2020); Reyes-Rodríguez et al., (2016)
- *Corporate reputation*	14 (25.9%)	Agan et al., (2013); Ferenhof et al., (2014); Heras & Arana, (2010); Chan, (2011); Singh et al., (2015a); Granly & Welo, (2014); Alberto & Erlantz, (2019); Castka & Prajogo, (2013); Ferenhof et al., (2014); Heras-Saizarbitoria et al., (2016); Graafland, (2018); Christine et al., (2019); Cantele & Zardini, (2020); Kehbila et al., (2009)
- *CSR*	2 (3.7%)	Meath et al., (2016); Agan et al., (2013)
- *Better access to the market*	2 (3.7%)	Granly & Welo, (2014); Alberto & Erlantz, (2019)
- *Economic benefits*	6 (11.1%)	Granly & Welo, (2014); Meath et al., (2016); De Steur et al., (2020); Reyes-Rodríguez et al., (2016); Brammer et al., (2012); Kehbila et al., (2009)
- *Enhanced customer satisfaction*	3 (5.5%)	Agan et al., (2013); Cantele & Zardini, (2020); De Steur et al., (2020)
- *Enhanced employee safety*	2 (3.7%)	De Steur et al., (2020); Kehbila et al., (2009)
- *Strengthened business relationships with stakeholders*	3 (7.4%)	Agan et al., (2013); Marco-Fondevila et al., (2018); Kehbila et al., (2009)
Employees' awareness and skills	7 (12.9%)	Cantele & Zardini, (2020); McKeiver & Gadenne, (2005); Castka & Prajogo, (2013); Witjes et al., (2017); Santos et al., (2011); Campos, (2012); Kehbila et al., (2009)
Gender and age motivation	2 (3.7%)	Graafland, (2020); Lewis et al., (2015)

TABLE 6 Barriers and challenges to the adoption of EMPs by SMEs

Barriers and challenges	# of cites (% of citations)	Reported works
Internal organisation barriers		
- *Lack of resources*	22 (40.7%)	Meath et al., (2016); Singh & Sarkar, (2019); Triguero et al., (2016); De Steur et al., (2020); Cantele & Zardini, (2020); Alberto & Erlantz, (2019); Buffa et al., (2018); Francesco et al., (2016); Lewis et al., (2015); Brammer et al., (2012); Hillary, (2004); McKeiver & Gadenne, (2005); Burke & Gaughran, (2006); Balzarova & Castka, (2008); Nawrocka, (2008); Heras & Arana (2010); Chan, (2011); Ferenhof et al., (2014); Granly & Welo, (2014); Alonso-Paulí & Andre, (2015); Voukkali et al., (2017); Kehbila et al., (2009)
- *Lack of employee engagement*	15 (27.7%)	Meath et al., (2016); Singh & Sarkar, (2019), De Steur et al., (2020); Alberto & Erlantz, (2019); Brammer et al., (2012); Hillary, (2004); Balzarova & Castka, (2008); Heras & Arana (2010); Chan, (2011); Granly & Welo, (2014); Alonso-Paulí & Andre, (2015); Aragón-Correa et al., (2008); Voukkali et al., (2017); Santos et al., (2011); Kehbila et al., (2009)
- *Managerial barriers due to their negative attitudes and lack of knowledge*	4 (7.4%)	Singh & Sarkar, (2019); Buffa et al., (2018); Meath et al., (2016); Kehbila et al., (2009)
- *Cultural barriers:*	5 (9.26%)	Balzarova & Castka, (2008); Buffa et al., (2018); Heras & Arana (2010); Ferenhof et al., (2014); Voukkali et al., (2017)
- *Less tech orientation*	5 (9.26%)	Triguero et al., (2016); Brammer et al., (2012); McKeiver & Gadenne, (2005); Heras & Arana (2010); Alonso-Paulí & Andre, (2015)
- *Less strategies*	3 (5.5%)	Singh & Sarkar, (2019); Heras & Arana (2010); Meath et al., (2016)
- *Size of the business*	4 (7.4%)	Singh et al., (2015a); Armas-Cruz et al., (2017); Lepoutre & Heene, (2006); McKeiver & Gadenne, (2005)
- *Insufficient benefits*	1 (1.8%)	Kehbila et al., (2009)
External environment barriers		
- *Local barriers*	3 (5.5%)	Burke & Gaughran, (2006); Hillary, (2004); Chan, (2011)
- *Industrial barriers*	3 (5.5%)	Burke & Gaughran, (2006); Hillary, (2004), Singh et al., (2015b)
- *Lack of supports (government, consultancy)*	4 (7.4%)	Lewis et al., (2015); Brammer et al., (2012); Hillary, (2004); Kehbila et al., (2009)
- *High cost of certification*	7 (12.9%)	Hillary, (2004); De Steur et al., (2020); Cantele & Zardini, (2020); Alberto & Erlantz, (2019); Kehbila, (2009); Chan, (2011); Santos et al., (2016)