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An Analysis of Sustainability in SMES: Current Publications and Future Directions

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Abstract

Sustainability is the foundation for the 2030 Agenda for Sustainable Development and its Sustainable Development Goals (SDGs). Sustainable development is defined by the World Commission on Environment and Development (1987) as, “Development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. Currently, sustainability has become a key business imperative across all industries for creating long-term value. Thus, this study analyzes recent advances made in research on sustainability in small and medium enterprises (SMEs) using the standard bibliometric analysis. Scopus database was utilized to collect a total of 844 articles between 2000 and 2022. The results provide important information on the trends of the current publications and emerging lines of research that can be studied in greater depth.

Keywords: Sustainability, SMEs, Bibliometric Analysis

Introduction

Sustainability is the foundation for the 2030 Agenda for Sustainable Development and its Sustainable Development Goals (SDGs). Sustainable development is defined by the World Commission on Environment and Development (1987) as, “Development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Anand et al., 2021). Currently, sustainability has become a key business imperative across all industries for creating long-term value.

In general, sustainability is a very broad and complex concept that has sparked a lot of scientific debate in recent years, thus generating great interest at academic, social, and business levels. The United Nations Brundtland Commission defined sustainability in 1987 as, "Filling the requirements of the present without compromising the ability of future generations to satisfy their own needs" (Brundtland, 1987). Sustainability can be studied using

both a macro-approach that focuses on the overall economic system and a micro-approach that focuses on specific operators (individuals, businesses, and governments). At the business level, corporate sustainability means meeting the needs of a company's direct and indirect stakeholders without hurting its ability to meet the needs of future stakeholders as well (Dyllick & Hockerts, 2002). Corporate sustainability can be explained in different ways because companies have to grow and take care of resources that are related to the economy, society, and the environment.

Furthermore, while research on sustainability in terms of economic and management performance has received considerable focus, the contributions of small and medium-sized enterprises (SMEs) to this area have received comparatively less attention. Here, we focus on SMEs, one of the main actors that can help achieve sustainability. We take a close look at the ways in which their production of goods and services can be more sustainable. The well-being and consistency of the global economy are greatly reliant on the functioning of SMEs. They are responsible for more than 95% of the gross domestic product (GDP), the vast majority of which is contributed by the SMEs In addition, SMEs lso helps to create wealth jobs, and also contribute to the society and the environment (Thompson, 2014). In the meantime, there is a lot of strain being put on the natural environment, and people are starting to realise that limited resources are running out quickly. They are an essential component of the supply chain, which is experiencing an increased demand for sustainable management practices from both consumers and suppliers, in particular, from the SMEs, that are competing with larger organisations or the government. Additionally, SMEs have a responsibility to ensure that they have access to the necessary resources to continue selling their products and services in the foreseeable future.

Literature Review

One of the main challenges for SMEs in adopting sustainable practices is the lack of resources and expertise. In a study by Raza et al (2021), it was found that SMEs face financial constraints and lack of knowledge about sustainability issues. This finding is consistent with other studies that highlight the importance of support from external stakeholders, such as government agencies, industry associations, and NGOs (Hassan et al., 2022; Tong et al., 2022). Another important factor is the role of leadership in promoting sustainability in SMEs. According to Thompson (2014) SME owners and managers play a crucial role in shaping the sustainability practices of their firms. They found that SMEs with proactive and committed leaders are more likely to adopt sustainable practices and to integrate sustainability into their business strategy.

The importance of stakeholder engagement in sustainability practices is also highlighted in the literature. In a study by Bocken et al (2021), it was found that SMEs that engage with stakeholders, such as customers and suppliers, are more likely to adopt sustainable practices. This finding is consistent with other studies that emphasize the importance of collaboration and partnerships in promoting sustainability (Ghisellini et al., 2016). Finally, the literature highlights the need for measurement and reporting of sustainability practices in SMEs. In a study by Hahn et al (2015), it was found that SMEs often lack the tools and knowledge to measure and report their sustainability performance. This finding is consistent with other studies that emphasize the importance of monitoring and reporting sustainability practices to stakeholders (Jung et al., 2021). The literature on sustainability in SMEs highlights the

importance of resources, leadership, stakeholder engagement, and measurement and reporting in promoting sustainable practices. SMEs face unique challenges in adopting sustainability practices, but with the support of external stakeholders, proactive leadership, and engagement with stakeholders, they can overcome these challenges and contribute to a more sustainable future.

Methods

This study employs a quantitative method via bibliometric analysis, which refers to the use of statistics to measure article and information from scopus publications. This approach enables the analysis of physical publications of articles or bibliographic units (Aidi and Mohamad, 2019). Additionally, a systematic approach could discover more detailed information related to the publications, including authors, frequency of keywords, and citations.

Figure 1 shows our search strategies using PRISMA, which involves three phases: identification, screening, and analyze The first phase involves a comprehensive search of the Scopus database which is recognized as the world's biggest database for interdisciplinary peer-reviewed literature (Mongeon & Paul-Hus, 2016). The search focuses on the string TITLE-ABS-KEY ("sustainability" OR "ESG" OR "green" OR "green finance" OR "SDG" OR "environment social and governance" OR "environment, Social & Governance") AND ("SME" OR "MSME" OR "Small Medium Enterprise" OR "Corporate Loan" OR "corporate finance"). The search was carried out on September 12, 2022, encompassing the 2000 to 2022 period, including all languages, and all document types (articles, book chapters, reviews, conference papers and books), which resulted in an initial total of 854 documents.

In the next phase, the initial results were filtered, whereby 10 documents were removed either due to duplication between articles and conference paper. Finally, 844 documents were retained as a final sample for further analysis.

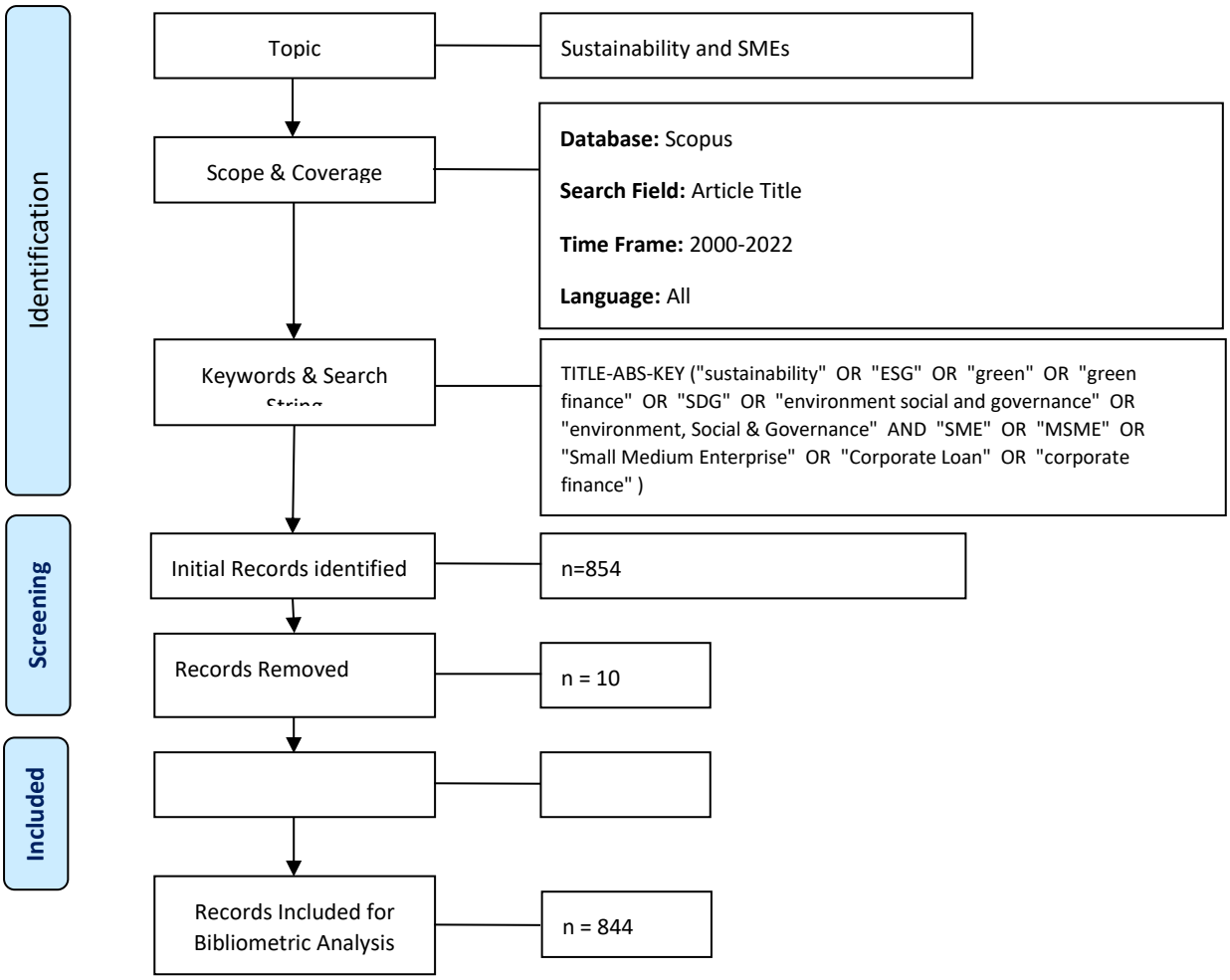

Figure 1: PRISMA Flow Diagram

Source: (Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group 2009: Hassan et al., 2023).

Results

Our bibliometric analysis focuses on four main areas and aims to answer the following questions: Which journals are these papers published? Where are the authors from (country of origin)? What is the key/interests (keywords analysis) of these studies? and How are these papers cited in the literature?

Hence, the extracted academic work was analysed based on the following characteristics: research productivity document and source type, document language, subject area, most active source title, publication distribution by country, most active institutions, authorship analysis, keyword analysis, title and abstract analysis, and citation analysis. The research also included annual growth statistics until 2022 including their frequency and percentage.

Distribution of Publications Over Time

Figure2 illustrates the number of publications on sustainability in SMEs. The results confirm the increasing interest in sustainability over the last 10 years. Although the first article dates

back to 2000, more documents were published only after 2012. In particular, the publications on sustainability in SMEs have been gradually increasing since 2012 (23) and peaked in 2020 (144). The first research was published in 2000 by D. Medina-Munoz, R. Medina-Munoz with an article titled, 'Small and medium-sized enterprises and sustainability: The case of the Canary Island'. This result confirms the novelty of the topic and the elevated interest by management scholars.

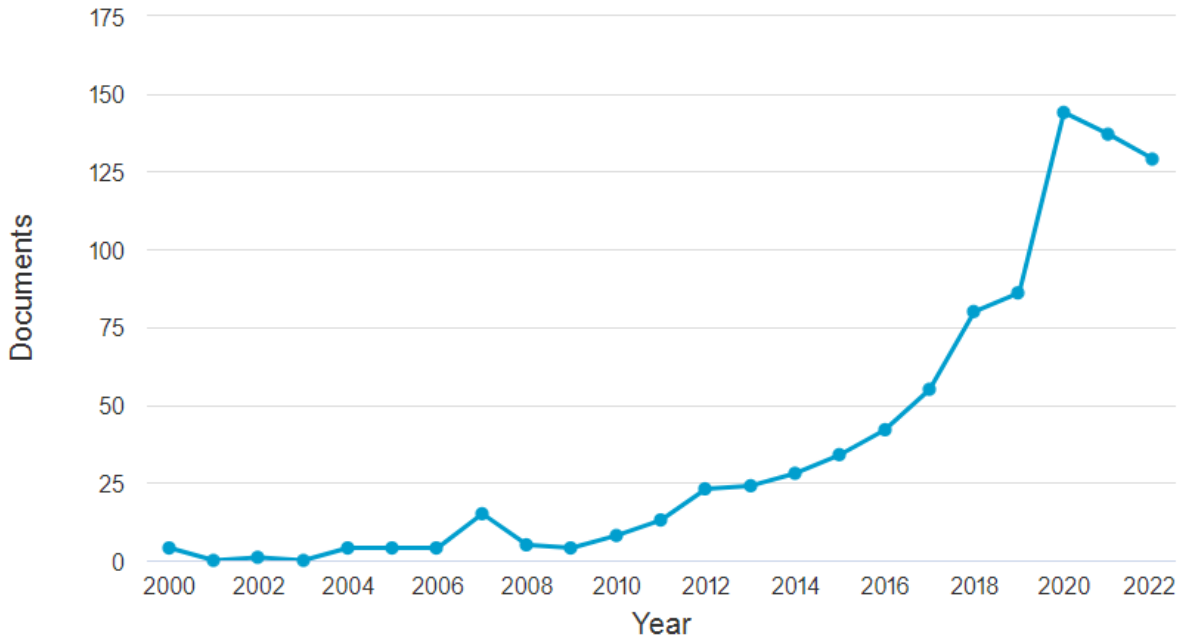

Figure2: Number of relevant publications

Document and Source Types

This study identified seven types of documents from the samples that have been published related to sustainability in SMEs, namely articles, book chapters, reviews, conference papers, editorials, notes and books. As presented in Table 1, most of the publications are from journal articles for 78.79% (665 publications), followed by conference papers at 13.86% (117 publications). The other types of documents collectively represent less than 10%.

As for the source types (Table 2), four sources of publications can be recognized in the samples, i.e., journals, books, book series, trade journal and conference proceedings. More than 80% of the documents are published in journals. It is important to note that the conference papers that appeared under document type are different from those that appeared under source type. Some conference papers were also published either in conference proceedings or as a book chapter within source type although the document type shows it originated from conference papers (Sweileh et al., 2017).

Table 1
Document Type

Document Type	Frequency	Percentage (%)
Article	665	78.79
Conference Paper	117	13.86
Review	35	4.15
Book Chapter	22	2.61
Editorial	2	0.24
Note	2	0.24
Book	1	0.12
Total	844	**100.00**

Table 2
Source Type

Source Type	Frequency	Percentage (%)
Journal	712	84.360
Conference Proceeding	81	9.597
Book Series	35	4.147
Book	15	1.777
Trade Journal	1	0.118
Total	**844**	**100.00**

Geographical Distribution and Language of Publications

Table 3 presents the top 10 countries of origin of authors who contributed publications in the area of sustainability in SMEs. Based on the analysis, the United Kingdom is listed as the highest publication contributor with a total of (106) publications. Malaysia (65) is among the top five after India (78), Italy (70), and China (67). It is surprising that authors from the United States, who usually contribute a vast majority of published research outputs in the field of business management, are not in the top three. In terms of language, 98.58% of the documents are published in the English language (see Table 4). Less than 3% of the documents are published in other languages, such as Spanish, German, Indonesian, Italian and Slovenian.

Table 3
Top 10 Countries that contributed to the publications

Country	Frequency	Percentage (%)
United Kingdom	106	8.95
India	78	6.58
Italy	70	5.91
China	67	5.65
Malaysia	65	5.49
Spain	53	4.47
United States	46	3.88
Indonesia	44	3.71
Germany	42	3.54
Pakistan	34	2.87

Table 4
Language Used for Publications

Language	Frequency	Percentage (%)
English	832	98.58
Spanish	8	0.95
German	1	0.12
Indonesian	1	0.12
Italian	1	0.12
Slovenian	1	0.12
Total	844	**100.00**

Publication by Subject Area

From the analysis of the subject areas shown in Table 5, it is interesting that most of the studies on sustainability in SMEs are under the area of business, management and accounting (20.66%). The second highest is under the area environmental science (17.99%), followed by social sciences (16.21%), and energy (12.06%).

Table 5
Subject Area

Subject Area	Frequency	Percentage (%)
Business, Management and Accounting	418	20.66
Environmental Science	364	17.99
Social Sciences	328	16.21
Energy	244	12.06
Engineering	207	10.23
Economics, Econometrics and Finance	122	6.03
Computer Science	111	5.49
Decision Sciences	93	4.60
Chemical Engineering	23	1.14
Mathematics	18	0.89

Publication Activity by Journal

The 844 articles reviewed in this study are published in 160 different places. Table 6 lists the publications with the top 10 articles on green finance research. The highest number of publications is in the Journal of Sustainability in Switzerland, followed by the Journals of Cleaner Production, and Business Strategy and the Environment, with 156, 43, and 34 publications, respectively.

Table 6
Top 10 Productive Source Titles

Source of Publication	Document no.	Percentage (%)
Article		
Sustainability Switzerland	150	53.42
Journal of Cleaner Production	43	14.73
Business Strategy and the Environment	34	11.64
Corporate Social Responsibility and Environmental Management	12	4.11
Technological Forecasting and Social Change	7	2.40
International Journal of Entrepreneurship and Small Business	7	2.40
Journal of Business Ethics	6	2.05
Management of Environmental Quality an International Journal	6	
Other document types		
Proceedings of the International Conference on Industrial Engineering and Operations Management	13	4.45
Lecture Notes on Mechanical Engineering	8	2.74

Note: Table 6 presents the top 10 productive source titles in the area of sustainability in SMEs. Since this study includes all types of documents as a sample, this analysis separates the results into two document types, i.e., “Article” and “Other document types” (book chapters, reviews, conference papers, editorials, notes and books).

Network Analysis

Keywords Co-occurrence Analysis

This study began by generating a word cloud for the authors’ keywords using WordSift (https://wordsift.org). Figure 3 shows the outcome of the word cloud generation with a maximum of 100 words and scale-setting. Figure 3 displays the top 100 terms (or parts of keywords) used in the published papers on sustainability. The magnitude of each word denotes the total number of times the keywords appear. Aside from the keyword used to search for the document's title, the word cloud depicts additional emerging keywords, such as environment social and governance, management, sustainability and SME.

Other keywords, despite their tiny size, are the words that have been utilised to accommodate the issue of green finance research. It is vital to note that the terms created in Figure 3 are the trending words utilised in combination with green finance research. As a result, we may anticipate that future green finance research will be focused on these themes.

Figure 3. Word cloud of the authors' keywords

The authors' keyword analysis was mapped with VOSviewer, a software tool for visualizing and constructing bibliometric networks. There are six groups in XBRL Research based on the authors' keywords. Figure 4shows the network visualization of authors' keywords, in which font size, square size, colour, and connecting line thickness, represent relationships to other keywords. For example, keywords with the same colour are commonly listed together. Therefore, in this study, SME, performance, strategy, and entrepreneur, show a similar colour (red) and green manufacturing, sustainability, etc., are in blue.

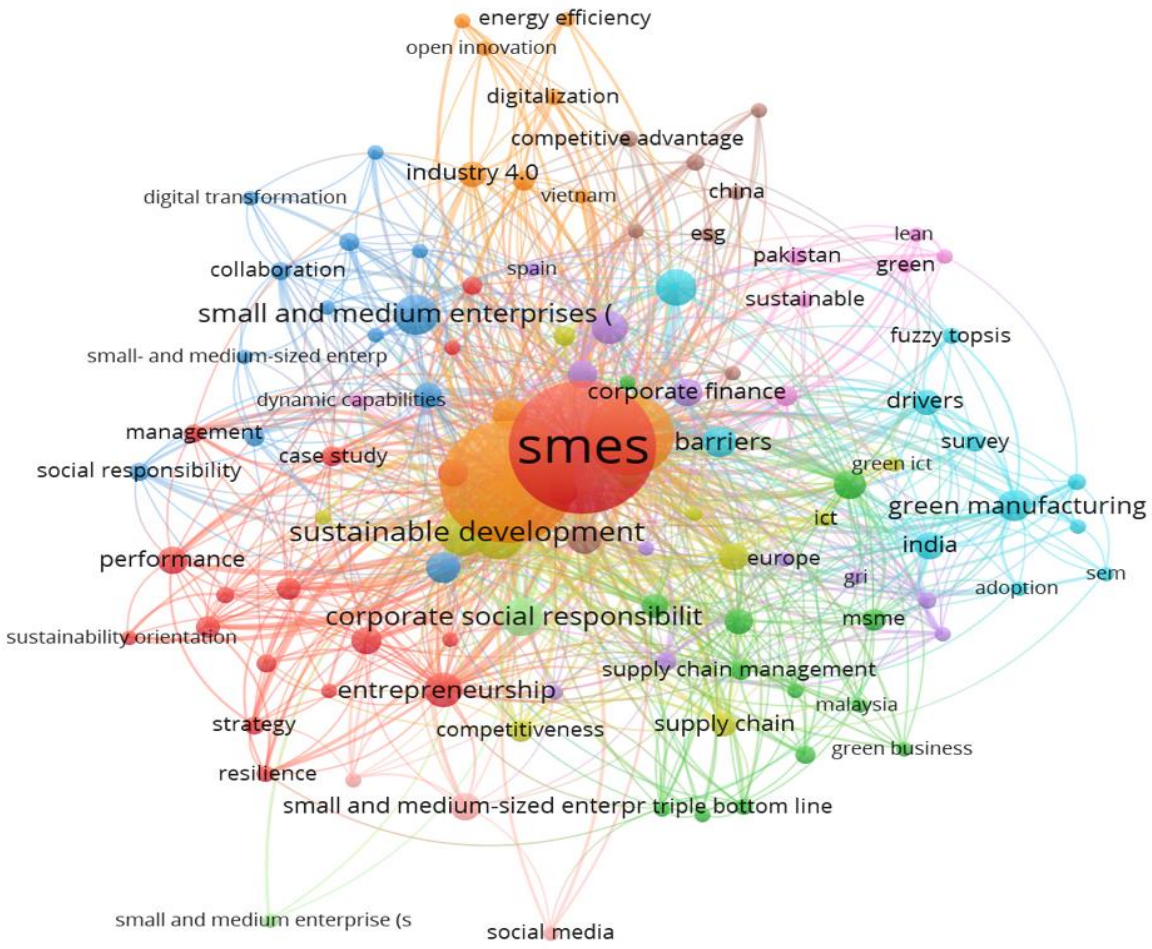

Figure 4: Network visualization map of the author keywords

Table 7 shows the top five keywords in bibliometric search: sustainability (11.63%), SMEs (9.66%), Small And Medium-sized Enterprises (6.05%), Sustainable Development (5.2%), and SME (3.68%). Other keywords at less than 3.0% are innovation, environmental management, business, and corporate social responsibility.

Table 7
Top Keywords

Author Keywords	Total Publications (TP)	Percentage (%)
Sustainability	477	11.63
SMEs	396	9.66
Small And Medium-sized Enterprise	248	6.05
Sustainable Development	213	5.20
SME	151	3.68

Citation Analysis

Table 8 summarises the citation metrics for the retrieved documents as of September 20, 2022. The Harzing's Publish or Perish software was used to find the citation metrics for the retrieved data from the Scopus database. The short description contains the number of

citations per year, per paper, and per author. As indicated, there are 16,718 citations reported in the 22 years (2000 – 2021) for the 844 retrieved articles. In addition to total citations reported by Scopus, Table ….also discloses the average number of citations per year. The document entitled "Sustainability-oriented innovation of SMEs: A systematic review" by Klewitz & Hansen (2014) received the highest number of citations at 621 citations.

Table 8
Citations Metrics

Metrics	Data
Papers	844
Citations	16,718
Years	22
Cites_Year	759.91
Cites_Paper	19.81
Cites_Author	6947.9
Papers_Author	353.34
Authors_Paper	3.1
h_index	61
g_index	108

Table 9
Highly cited articles

No.	Authors	Title	Year	Cites	Cites per Year
1	J. Klewitz, E.G. Hansen	Sustainability-oriented innovation of SMEs: A systematic review	2014	621	77.63
2	K. Mathiyazhagan, K. Govindan, A. NoorulHaq, Y. Geng	An ISM approach for the barrier analysis in implementing green supply chain management	2013	493	54.78
3	S.-Y. Lee, R.D. Klassen	Drivers and enablers that foster environmental management capabilities in small- and medium-sized suppliers in supply chains	2008	432	30.86
4	H.E.J. Bos-Brouwers	Corporate sustainability and innovation in SMEs: Evidence of themes and activities in practice	2010	422	35.17
5	V. Rizos, A. Behrens, W. van der Gaast, E. Hofman, A. Ioannou, T. Kafyeke, A. Flamos, R. Rinaldi, S.	Implementation of circular economy business models by small and medium-sized enterprises (SMEs): Barriers and enablers	2016	365	60.83

	Papadelis, M. Hirschnitz-Garbers, C. Topi				
6	S.K. Singh, M.D. Giudice, R. Chierici, D. Graziano	Green innovation and environmental performance: The role of green transformational leadership and green human resource management	2020	354	177
7	Y. Arayici, P. Coates, L. Koskela, M. Kagioglou, C. Usher, K. O'Reilly	Technology adoption in the BIM implementation for lean architectural practice	2011	329	29.91
8	H. Gupta, M.K. Barua	Supplier selection among SMEs on the basis of their green innovation ability using BWM and fuzzy TOPSIS	2017	300	60
9	M.C. Cuerva, Ã. Triguero-Cano, D. CÃ³rcoles	Drivers of green and non-green innovation: Empirical evidence in Low-Tech SMEs	2014	283	35.38
10	B. Ilbery, D. Maye	Food supply chains and sustainability: Evidence from specialist food producers in the Scottish/English borders	2005	277	16.29
11	S.B. Moore, S.L. Manring	Strategy development in small and medium sized enterprises for sustainability and increased value creation	2009	265	20.38
12	A. Revell, D. Stokes, H. Chen	Small businesses and the environment: Turning over a new leaf ?	2010	245	20.42
13	A. Revell, B. Blackburn	The business case for sustainability? An examination of small firms in the UK's construction and restaurant sectors	2007	239	15.93
14	S. Thanki, K. Govindan, J. Thakkar	An investigation on lean-green implementation practices in Indian SMEs using analytical hierarchy process (AHP) approach	2016	230	38.33
15	M. Wright, P. Westhead, D. Ucbasaran	Internationalization of small and medium-sized enterprises (SMEs) and international entrepreneurship: A critique and policy implications	2007	213	14.2
16	W. Ben Arfi, L. Hikkerova, J.-M. Sahut	External knowledge sources, green innovation and performance	2018	171	42.75
17	H. Walker, L. Preuss	Fostering sustainability through sourcing from small businesses: public sector perspectives	2008	164	11.71

18	N.S. Gandhi, S.J. Thanki, J.J. Thakkar	Ranking of drivers for integrated lean-green manufacturing for Indian manufacturing SMEs	2018	158	39.5
19	R.A.R. Ghazilla, N. Sakundarini, S.H. Abdul-Rashid, N.S. Ayub, E.U. Olugu, S.N. Musa	Drivers and barriers analysis for green manufacturing practices in Malaysian SMEs: A preliminary findings	2015	156	22.29
20	E. Masurel	Why SMEs invest in environmental measures: Sustainability evidence from small and medium-sized printing firms	2007	156	10.4

Table 10 enumerates highly cited sources related to sustainability-oriented innovation and environmental practices within the context of Small and Medium-sized Enterprises (SMEs). The sources encompass a range of themes, including green supply chain management, circular economy business models, and the drivers of green and non-green innovation. The seminal work titled "Sustainability-oriented innovation of SMEs: A systematic review," published in the Journal of Cleaner Production in 2014, stands out as the most highly cited source, attaining 621 citations. This comprehensive review provides a foundational understanding of sustainability-oriented innovation within SMEs.

Another noteworthy contribution is the 2013 article "An ISM approach for the barrier analysis in implementing green supply chain management" in the Journal of Cleaner Production, which has garnered 493 citations. This source reflects the scholarly interest in understanding and overcoming barriers in the implementation of green supply chain practices.

The publication "Drivers and enablers that foster environmental management capabilities in small- and medium-sized suppliers in supply chains," featured in Production and Operations Management in 2008, is recognized with 432 citations. This work delves into the factors that contribute to the development of environmental management capabilities among SME suppliers in supply chains. Additionally, the 2010 article "Corporate sustainability and innovation in SMEs: Evidence of themes and activities in practice" from Business Strategy and the Environment is cited 422 times, showcasing the significance of exploring themes and activities related to corporate sustainability and innovation within SMEs.

The diverse array of highly cited sources in this table underscores the multifaceted nature of sustainability-oriented innovation in SMEs, ranging from the strategic adoption of green supply chain practices to the examination of drivers and barriers influencing environmental management capabilities. These sources collectively form a valuable foundation for researchers and practitioners seeking to comprehend, implement, and advance sustainable practices within the SME sector.

Table 10
Highly Cited Source

Cites	Title	Year	Source
621	Sustainability-oriented innovation of SMEs: A systematic review	2014	Journal of Cleaner Production
493	An ISM approach for the barrier analysis in implementing green supply chain management	2013	Journal of Cleaner Production
432	Drivers and enablers that foster environmental management capabilities in small- and medium-sized suppliers in supply chains	2008	Production and Operations Management
422	Corporate sustainability and innovation in SMEs: Evidence of themes and activities in practice	2010	Business Strategy and the Environment
365	Implementation of circular economy business models by small and medium-sized enterprises (SMEs): Barriers and enablers	2016	Sustainability (Switzerland)
354	Green innovation and environmental performance: The role of green transformational leadership and green human resource management	2020	Technological Forecasting and Social Change
329	Technology adoption in the BIM implementation for lean architectural practice	2011	Automation in Construction
300	Supplier selection among SMEs on the basis of their green innovation ability using BWM and fuzzy TOPSIS	2017	Journal of Cleaner Production
283	Drivers of green and non-green innovation: Empirical evidence in Low-Tech SMEs	2014	Journal of Cleaner Production
277	Food supply chains and sustainability: Evidence from specialist food producers in the Scottish/English borders	2005	Land Use Policy
265	Strategy development in small and medium sized enterprises for sustainability and increased value creation	2009	Journal of Cleaner Production
245	Small businesses and the environment: Turning over a new leaf ?	2010	Business Strategy and the Environment
239	The business case for sustainability? An examination of small firms in the UK's construction and restaurant sectors	2007	Business Strategy and the Environment
230	An investigation on lean-green implementation practices in Indian SMEs using analytical hierarchy process (AHP) approach	2016	Journal of Cleaner Production
213	Internationalization of small and medium-sized enterprises (SMEs) and international entrepreneurship: A critique and policy implications	2007	Regional Studies

171	External knowledge sources, green innovation and performance	2018	Technological Forecasting and Social Change
164	Fostering sustainability through sourcing from small businesses: public sector perspectives	2008	Journal of Cleaner Production
158	Ranking of drivers for integrated lean-green manufacturing for Indian manufacturing SMEs	2018	Journal of Cleaner Production
156	Drivers and barriers analysis for green manufacturing practices in Malaysian smes: A preliminary findings	2015	12th Global Conference on Sustainable Manufacturing, GCSM 2014
156	Why SMEs invest in environmental measures: Sustainability evidence from small and medium-sized printing firms	2007	Business Strategy and the Environment

Discussion

Bibliometric analysis is a research method that uses statistical analysis to examine patterns and trends in published literature. This study conducted a bibliographic analysis of 844 publications on sustainability in SMEs indexed in the Scopus database for the period between 2000 and 2022. The results show a steady increase in the number of publications on this topic, with a peak in 2021 (see Figure 1). Several findings pave the way for future publications. These include the trends in publications, citation analysis, and keyword analysis. Findings of this study reveal that the number of publications on sustainability in SMEs shows an increasing trend throughout the period of study. Besides, the bibliometric analysis suggests that sustainability in SMEs is an increasingly important topic for researchers. The steady increase in the number of publications on this topic suggests that researchers are recognizing the importance of sustainability for SMEs and are interested in exploring the challenges and opportunities in this area.

The article, "Sustainability-oriented innovation of SMEs: A systematic review" by Klewitz & Hansen (2014) is currently the most cited work with 621 citations. The United Kingdom and India are the countries with the highest number of citations. Journal of Sustainability Switzerland appears as the most effective journal for the SME sustainability area with 156 publications. In addition, this study discovers that scholars from various countries have been working together to recommend the importance of studying sustainability capability in-depth. Furthermore, the results indicate that publications on research on sustainability in SMEs is spread over many disciplines, such as sustainability, SMEs, Small and Medium-sized Enterprises, innovation environmental management, etc.

The analysis also identified the most common keywords and themes in the literature on sustainability in SMEs. The most common keywords were "sustainability," "small and medium-sized enterprises," "green innovation," "sustainable supply chain," and "sustainable entrepreneurship." The most common themes included the role of leadership, the importance of stakeholder engagement, the challenges of implementing sustainable practices, and the benefits of sustainability for SMEs. The most productive authors and institutions in the field suggest that research on sustainability in SMEs is concentrated in a

few institutions and among a few researchers. This suggests that there may be opportunities for collaboration and knowledge sharing among researchers in this field. The most common keywords and themes in the literature suggest that the challenges of implementing sustainable practices in SMEs are a major area of concern for researchers. This highlights the need for research that focuses on identifying strategies and tools to support SMEs in adopting sustainable practices.

The results of the bibliometric analysis suggest that sustainability in SMEs is an increasingly important topic for researchers. The analysis identified the most productive authors and institutions in the field, as well as the most common keywords and themes in the literature. The findings suggest that the topic of sustainability is an important subject that needs further investigation, and more importantly, when the current economic, political and financial scenarios show a downward trend.

Of late, most research has focused on sustainability in view of the expanding worldwide movement in that direction. Although conceptually vague, there has been no progress made toward reaching an agreement among researchers over how to define it. With increasing interests in recent literature but a lack of attention from mainstream economics and finance journals, it has created a gap that gives opportunities to researchers in at least three directions for future developments. Journals that focus on mainstream finance should have an interest in discussing topics, such as sustainability in business, sustainability in risk management, and governance. Second, it would be helpful for regulators and policymakers to have more studies on green finance challenges in the context of developing nations. This would allow them to harmonise diverse policy goals and produce well-defined policy objectives. Scholars from developing nations will have more opportunities to succeed if they have access to clear information advantages, and there will be an increase in the amount of international engagement between developing countries and developed countries.

In addition, it is important to point out that the primary driver of sustainability, as opposed to traditional finance themes, is policy. This is an important distinction that sets sustainability apart from traditional business topics. The rapidly shifting economic and political situations on a global scale are anticipated to give rise to the emergence of new challenges within this area of study. In addition, to the best of our knowledge, there is not yet any complete evaluation of the relevant literature. There is no doubt that it is worthwhile to investigate and evaluate in the light of the outcomes of our bibliometric study. Despite the insightful results collected from the bibliometric analysis, the quality of analysis still needs to be improved in future research with other techniques. The first technique is in the context of keywords selected in the search process. In this paper, the results are based on the keywords (*"sustainability" OR "ESG"* OR *"green"* OR *"green finance"* OR *"SDG"* OR *"environment social and governance"* OR " environment, Social & Governance" AND *"SME"* OR *"MSME"* OR *"Small Medium Enterprise"* OR *"Corporate Loan"* OR *"corporate finance"*), which is in turn, is based on the title of the paper. As microfinance is a general term, some scholars may have used a more specific keyword. The advantage of using more keywords is that it can contribute to more comprehensive search results, thus improving the quality of the findings.

Lastly, no search query is completely precise for capturing all the published research work in this area. Hence, some unexpected negative results can be obtained. Although the Scopus database is considered as the most comprehensive database, with many disciplines and indices, other databases can be included in the search query, such as Web of Science and Google Scholar; this may avail richer findings and more insights. Despite the limitations of the search database, the results of the current search at least present an interesting trend on microfinance and repayment research from 1996 to 2022 (Hassan & Yahya, 2020). In addition, utilising the bibliometric approach has contributed to the extension of the body of knowledge on microfinance and repayment behaviour.

Conclusion

In summary, the bibliometric analysis conducted in this study illuminates the escalating significance of sustainability in Small and Medium-sized Enterprises (SMEs) research. The consistent upward trajectory of publications, peaking in 2021, underscores a heightened awareness and acknowledgment of sustainability issues within the SME sector. Notably, the influential work "Sustainability-oriented Innovation of SMEs: A Systematic Review" by Klewitz and Hansen exemplifies a pivotal contribution shaping the ongoing discourse. The primary achievement of this study lies in its revelation of the intricate nature of sustainability in SMEs. By pinpointing impactful works, prolific contributors, and prevalent themes, the analysis facilitates the construction of a nuanced understanding of the evolving research landscape.

The significance of this study extends to its valuable contributions to various stakeholders involved in SME sustainability research. Researchers, policymakers, and practitioners benefit from the provided roadmap that navigates the current state of SME sustainability research. Central to this analysis is the delineation of the intricate dimensions of sustainability in SMEs. Identifying influential works, prolific contributors, and prevalent themes enriches our comprehension of the ongoing discourse, offering valuable insights to diverse stakeholders. Looking forward, the study paves the way for future research directions, including the exploration of policy influence on sustainability in SMEs, consideration of regional variations, and the evaluation of the effectiveness of regulatory frameworks. Additionally, delving into challenges and opportunities in green finance within the context of developing nations presents an avenue for providing insights to regulators and policymakers.

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