A Bibliometrics Visualization Analysis of Sustainable Green Supply Chain Management in Small and Medium Enterprises

[1]Rahmad Solling Hamid, [2]Suriyanti, [3]Imaduddin
[1]Faculty of Economics and Business, Universitas Muhammadiyah Palopo, Indonesia
[2,3]Faculty of Economic and Business, Universitas Muslim Indonesia, Indonesia
[1]rahmadshamid@umpalopo.ac.id, [2]suriyanti.mangkona@umi.ac.id, [3]Imaduddin@umi.ac.id,

ABSTRACT

This bibliometric study entails an analysis of publications about green supply chain management (GSCM) within small and medium enterprises (SMEs). The research aims to scrutinize the research performance concerning GSCM in SMEs. This study identifies countries, leading journals, scholars, and research themes. This research adopts bibliometric methods to focus on publications between 2007 and 2024, sourced from the Scopus database and limited to English-language publications. The document type analyzed is articles, yielding 133 qualifying articles for analysis using Rstudio and VOSviewer. Results indicate rapid growth in studies on GSCM in SMEs since 2007. Influential countries in the realm of GSCM within SME contexts include China, Indonesia, India, Malaysia, and the United Kingdom. Furthermore, the Journal of Cleaner Production and author Le TT emerge as the most prolific scholarly output in this domain. Supply Chain Management, GSCM, and SMEs are frequently recurring keywords, totalling 407 keyword link strengths. Keyword analysis over time indicates a trend towards adopting newly pertinent terms such as human resources, technology, circular economy (CE), trade, and business. Thus, utilising GSCM signifies promising prospects for SMEs in the future. This study adopts bibliometric methods based on document-type articles from the Scopus database collected as of March 15, 2024. Publications based on document types such as conference papers, conference reviews, book chapters, and sources outside the Scopus database, such as WoS, are disregarded in this research. The study reveals that the sustainable implementation of GSCM in SMEs is an emerging requirement and complex to manage for SMEs, necessitating new concepts and appropriate strategies for implementation. This study objectively evaluates research progress in GSCM within SMEs, highlighting research achievements and gaps while discussing contributions to the scholarly community.

Keywords: Green Supply Chain Management, Small and Medium Enterprises, Technology, Human Resources, Economy Circular.

INTRODUCTION

In the contemporary business landscape, sustainable supply chain management (SSCM) has gained increasing attention worldwide, mainly due to government regulations, consumer pressure for sustainable products, market dynamics, increasing public attention and awareness, and the competitive opportunities it offers (Luthra & Mangla, 2018); Kusi-Sarpong et al., 2023). As a result, there has been a surge in the popularity of SSCM, which forces organizations to adapt their supply chain activities (Shekarian, Ijadi, Zare, & Majava, 2022; Gonçalves, Magalhães, Ferreira, & Arantes, 2024). This adaptation enables organizations to enhance sustainable development while obtaining social, environmental, and economic benefits (Moktadir, Ali, Rajesh, & Paul, 2018; Gonçalves et al., 2024). Integrating sustainability principles into supply chain operations has become essential for businesses across industries to reduce risk, improve competitiveness, and build stakeholder trust.

Sustainable development initiatives in supply chains are often started by pioneering organizations, not just companies, and spread throughout the supply chain. According to (Kot, 2018), proactive organizations in a supply chain can start sustainable development initiatives by implementing rigorous practices, which can then spread to other parts of the supply chain. The process of "spreading" does not happen automatically but requires a deliberate effort on the part of both the spreader (i.e., the pioneering organization that initiates the action in the supply chain) and the other companies in the supply chain, which will consume and absorb the knowledge as a long-term practice (Sroka et al., 2014).

In this context, small and medium-sized enterprises (SMEs) play a pivotal role in the global economy, contributing significantly to employment,

innovation, and economic growth. Applying sustainable supply chain management (SCM) concepts to the operational strategies of SMEs is crucial. While all sustainability areas play an essential role in SMEs' supply chain management practices (Kot, 2018), their impact on sustainability outcomes and their ability to navigate the complexities of SCM are diverse and depend on their operational dynamics and resource constraints.

In principle, supply chain performance is evaluated from a business perspective and calculated based on its impact on the environment and society (Kot, 2018). It implies that if a supply chain is truly sustainable, it will not cause net damage to ecosystems or social systems and can simultaneously generate long-term profits (Niño-Amézquita et al., 2017).

To the best of our knowledge, many previous bibliometric studies focused on Green Supply Chain Management (GSCM), such as the structural relationships between GSCM factors, viz. drivers, practice indicators, and performance measures (Maditati et al., 2018), the relationship between GSCM and organizational culture (El Baz & Iddik, 2022), providing a bibliometric analysis of green supply chain management literature in the platform economy (GSCM-PE) (Zhang & Zhao, 2022), and the relationship between corporate reputation and supply chain issues (von Berlepsch et al., 2024). However, limited studies specifically address green supply chain management (GSCM) in small and medium enterprises (SMEs). There are still many opportunities for additional research in the formal modelling of green supply chain management with practical applications (Fahimnia et al., 2015), especially regarding GSCM in SMEs. GSCM is essential for SMEs because it helps protect the environment, ensure regulatory compliance, increase customer engagement, improve operational efficiency, and open access to global markets.

To deepen the understanding of the utilization of GSCM in SMEs, we have conducted a data analysis of various publications published between 2007 and 2024. During this period, several researchers have identified the effectiveness and development of GSCM in the SME context. Through this study, we present a rich summary of knowledge that provides researchers access to essential data regarding trends and open research questions, which can enrich the understanding of GSCM implementation in SMEs. Based on this analysis, we explore several interesting aspects for researchers and SME practitioners. Firstly, we explore global trends in the utilization of GSCM in SMEs. Secondly, we analyze the contributions and collaborations from various countries, institutions, and journals in this domain, highlighting papers with significant influence. Thirdly, we identify the most productive authors in this field. Fourthly, we uncover research focuses by analysing keywords used in related publications. Fifthly, we endeavour to identify future directions for developing GSCM in the SME context. Thus, this analysis is expected to contribute meaningfully to further understanding and development in applying GSCM in SMEs.

This study aims to conduct a comprehensive bibliometric visualization analysis of the scientific literature on SSCM in SMEs. By synthesizing existing knowledge, this study aims to shed light on key themes, research trends, and gaps in understanding SSCM in SMEs, thereby contributing to academic discourse and practical implications for businesses.

METHODS

This study uses data obtained from Scopus, a bibliographic resource owned by Elsevier. Scopus provides various functionalities to support robust bibliometric analyses (Assis & Gonçalves, 2022; Boukid, 2022; Dirpan et al., 2023). The tool is popular among academics seeking high-quality analytical insights (Boukid, 2022; Sinha, Priyadarshi, Bhushan, & Debbarma, 2021; Dirpan et al., 2023). Scopus, with a much more extensive electronic database than Web of Science or PubMed and more accurate than Google Scholar, offers comprehensive coverage of the scientific literature that has been peer-reviewed and has a good citation record (Mongeon & Paul-Hus, 2016; Falagas, Pitsouni, Malietzis, & Pappas, 2008). The selection of Scopus as the data source for this review was based on its reputation as a comprehensive and reliable repository of scholarly works. The search method utilized a topic search including title, abstract, and keywords to search for all related publications.

Data collection was conducted on March 15, 2024, resulting in 183 articles to prevent bias and inconsistencies arising from database changes. The research focused on publications between 2007 and 2024, with restrictions on English-language publications, articles, the final publication stage, and journal sources. Ultimately, 133 articles were eligible for analysis. Bibliometric data from the selected publications was converted into comma-separated value files and organized and categorized by author, title, publication year, journal source, research institution, author keywords, and country or region. Before analysis, the data was pre-screened to remove

corrupt or duplicate entries. Some indicators were ranked from the highest using standardized competitive rankings. Especially for the top 10 indicators of journals, an impact factor (IF) is attached. According to Ayan et al. (2022) and Dirpan et al. (2023), the IF of a journal indicates the average number of annual citations received from recent articles published in that journal.

The data analysis used in this study was with VOSviewer (v.1.6.18). According to Garrido-Romero, Aguado, Moral, Brindley, & Ballesteros (2022), Zhong & Lin (2022), Dirpan et al. (2023), VOSviewer was used to generate bibliometric graphical mappings and network visualizations using the most commonly used terms, countries, affiliations, and journals that made the most significant contributions and were related to each other. Meanwhile, RStudio (R. 4.3.3) was used to visualize the analyzed data and create a global map showing the geographical distribution of articles (Dirpan et al., 2023).

RESULT AND DISCUSSION
Key Information About the Data (2007-2024)

In this study, only articles published between 2007 and 2024 were included. One hundred thirty-three articles were identified from the Scopus database, involving 78 journals and 407 authors (see Table 1). The average number of citations was 28.08, with an annual growth rate of 13.8%.

Table 1. Primary information on Green Supply Chain Management (GSCM) in Small and Medium Enterprises (SMEs) research from 2007 to 2024.

Description	Results
Primary information about the data	
Timespan	2007:2024
Sources (Journals)	78
Documents	133
Annual Growth Rate %	13,8
Document Average Age	3,94
Average citations per doc	28,08
Document contents	
Keywords Plus (ID)	444
Author's Keywords (DE)	407
Authors	
Authors	407
Authors of single-authored docs	9
Authors collaboration	
Single-authored docs	10
Co-Authors per Doc	3,37
International co-authorships %	31,58
Document types	
Article	133

Trends in The Number of Publications

Figure 2 shows the annual development of publications related to green supply chain management (GSCM) in small and medium enterprises (SMEs). Between 2018 and 2023, there was a significant increase, namely in 2017 = 7 documents and 2018 = 7 documents, respectively. Furthermore, 2019 = 14 documents, 2020 = 14 documents, and 2021 = 14 documents. Although there was a decrease in 2022 to 13 documents, However, the peak occurred in 2022, with 37 documents. This signifies an annual growth rate, reflecting the changing research interest in green supply chain management (GSCM) in small and medium enterprises (SMEs) over time.
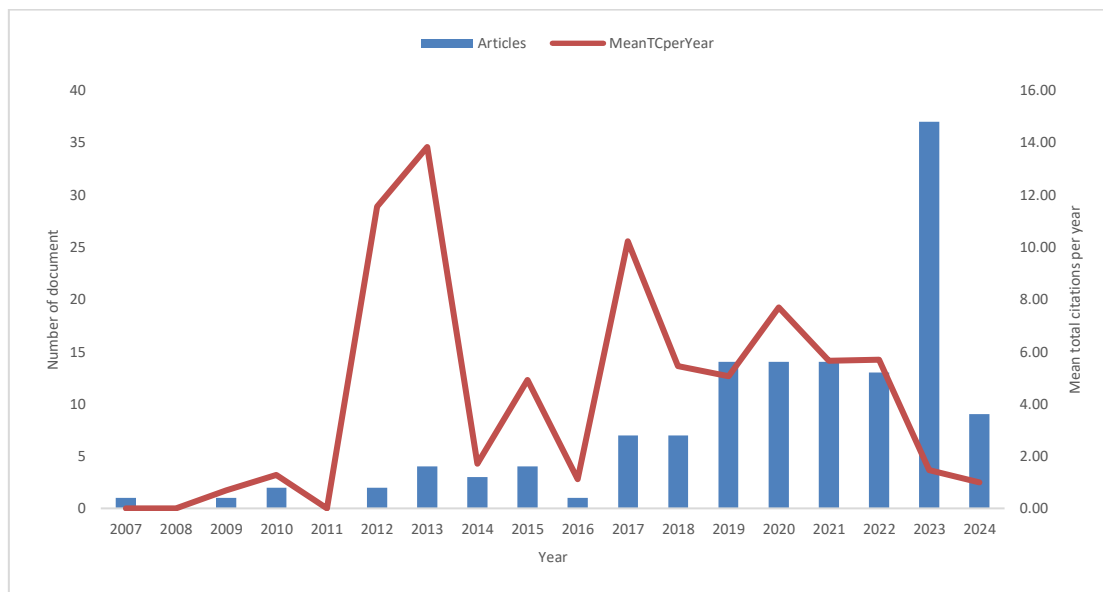
Figure 2. Annual production and average citation per year research on Green Supply Chain Management (GSCM) in Small and Medium Enterprises (SMEs) research from 2007 to 2024

Analysis of Country Contributions

In Figure 3, the most active countries in publications on Green Supply Chain Management (GSCM) in Small and Medium Enterprises (SMEs) are shown in a darker blue colour, indicating more articles. The study involved contributions from 35 countries.

Among the top five countries, China was the first to publish in 2009 (4 publications), followed by China in 2010 (3 publications), India in 2013 (5 publications), Indonesia in 2015 (4 publications), and the United Kingdom (4 publications) in 2017.
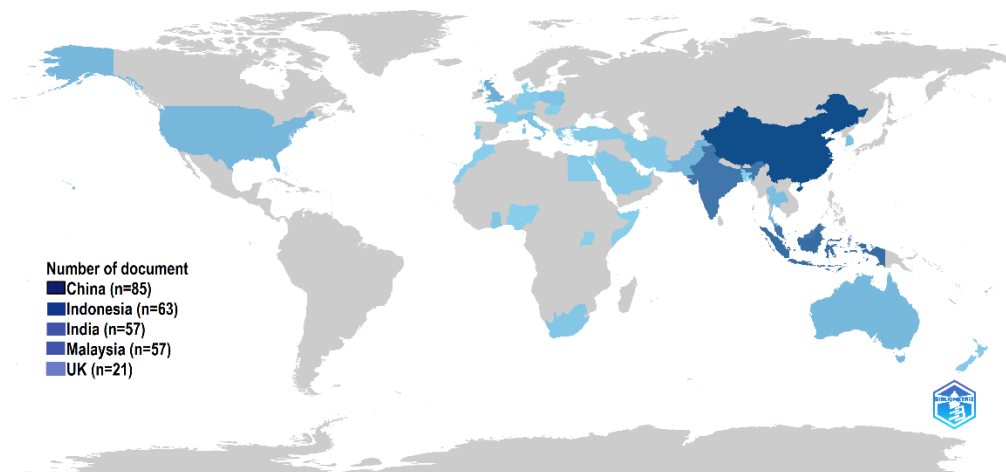

Fig. 3. Country scientific production on Green Supply Chain Management (GSCM) in Small and Medium Enterprises (SMEs) research from 2007 to 2024

Furthermore, Figure 4 shows the annual article publications of the top five countries. In 2024, China will have published 85 articles, which is the highest number of Green Supply Chain Management (GSCM) articles in small and medium enterprises (SMEs), followed by Indonesia, India, Malaysia, and the United Kingdom with a total of 63, 57, 57, and 21, respectively. China has cumulatively contributed to

this research topic among the top five countries. China is a leading country in the study of green supply chain management (GSCM) in small and medium enterprises (SMEs) because it has a high level of expertise in industry and economy. The study of green supply chain management (GSCM) in small and medium enterprises (SMEs) has become an increasingly important research subject in China.

GSCM refers to integrating environmentally responsible practices in supply chain management to reduce negative environmental impacts while improving efficiency and sustainability. China has a substantial environmental impact as one of the world's largest manufacturers. With its rapid growth in the manufacturing industry, China also faces significant challenges in terms of pollution and other environmental impacts. Therefore, it is essential to pay attention to GSCM practices, especially among SMEs, which can significantly influence the supply chain.
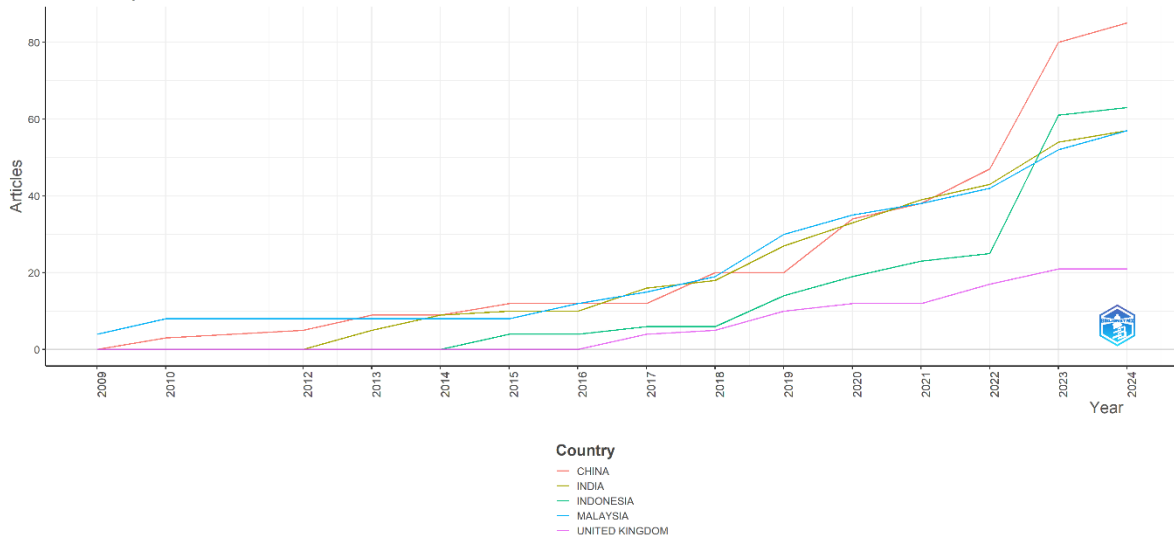

Figure 4. The Most Five Country Production Over Time

Article Analysis by Journal

The information presented in Table 2 shows the top publications on green supply chain management (GSCM) in small and medium enterprises (SMEs). A total of 78 journals that published 133 articles were analyzed. The top 10 publications show that approximately 10.64% of the total articles have been produced. The Journal of Cleaner Production and Sustainability (Switzerland) has the most articles that have been published (n = 12). In addition, Table 2 also provides information on the highest number of citations, with the Journal of Cleaner Production at the top with a total of 1,409 citations. Followed by Management of Environmental Quality: An International Journal and Journal of Manufacturing Technology Management with 317 and 195, respectively. Of the ten journals with the most publications listed, the Asia Pacific Journal of Marketing and Logistics published its first article in 2017, while the Journal of Cleaner Production published its first article in 2012.

Table 2. Top-Ten Journals That Published the Highest Number of Articles on The Subject

SCR	Sources	Document	Total citations	Best rank	PY_start
1st	Journal of Cleaner Production	12	1409	Q1	2013
2nd	Sustainability (Switzerland)	12	147	Q2	2018
3rd	Environmental Science and Pollution Research	7	157	Q1	2020
4th	Management Of Environmental Quality: An International Journal	6	317	Q1	2018
5th	Uncertain Supply Chain Management	5	10	Q3	2021
6th	Cleaner Logistics and Supply Chain	4	40	Q1	2022
7th	International Journal of Supply Chain Management	4	50	Q3	2019
8th	Journal of Environmental Planning and Management	3	67	Q1	2017

SCR	Sources	Document	Total citations	Best rank	PY_start
9th	Journal of Manufacturing Technology Management	3	195	Q1	2015
10th	Asia Pacific Journal of Marketing and Logistics	2	25	Q1	2017

Analysis of Articles by Author

The data analyzed consisted of 133 articles by 407 authors. The analysis presents the top 10 authors with the highest number of publications related to active food packaging in Table 3. The study used RStudio, focusing on author productivity and the impact of citations on the h-index. The h-index is an indicator used to measure the contributions and achievements of a researcher, although it is not always relevant for evaluation across disciplines. Citations also assess an author's influence in a field (Dirpan et al., 2023). As shown in Table 3, Lee TT had the highest number of publications (n = 4) but only ranked third in citations (44 in total). Mathiyazhagan K (total 727 citations) and Kim St. (total 308 citations) held the first and second ranks in the number of citations. Another factor affecting the number of citations was the article's publication year. Mathiyazhagan K., who published the article in 2013, received more citations than Kim St., who published it in 2012 (one year earlier.

Table 3. Top Ten Authors Who Participated the Most in Studies on Green Supply Chain Management (GSCM) in Small and Medium Enterprises (SMEs)

SCR	Authors	TC	h-index	Documents	Institutions	Country	PY_start
1st	Le TT	44	9	4	University of Economics and Finance	Vietnam	2022
2nd	Afum E	94	17	3	University of Bristol	UK	2020
3rd	Agyabeng-Mensah Y	94	1	3	Curtin University	Australia	2020
4th	Kholaif MMNHK	7	6	3	University of Science and Technology Beijing	China	2023
5th	Kim St	308	3	3	St. Mary's University	USA	2012
6th	Lim Mk	140	56	3	Chongqing University	China	2018
7th	Mathiyazhagan K	727	29	3	ITM University	India	2013
8th	Baah C	7	16	2	Charles Darwin University	Australia	2023
9th	Bag S	154	35	2	International University of Rabat	Marocco	2021
10th	Centobelli P	189	34	2	University of Naples Federico II	Italy	2020

Based on the information in Table 3, Le TT from the University of Economics and Finance in Vietnam made the most significant contribution to Green Supply Chain Management (GSCM) in small and medium enterprises (SMEs) research, with three articles and 727 citations. In his study, Le TT prioritizes testing the impact of humane entrepreneurship (HumEnt) on sustainable corporate performance (SCP) in small and medium enterprises (SMEs) in developing countries (Le, 2022).

In second place is Kim St. from St. Mary's University USA, with three articles and 308 citations. In his research, Kim St. assessed the changing impact of green supply chain management (GSCM) on employee job satisfaction, operational and relational efficiency, and business performance of SMEs serving as suppliers to large buying companies (Kim et al., 2021). Furthermore, in third place, Centobelli P came from the University of Naples Federico II, Italy, with two articles and 189 citations. One of his research

projects focuses on developing a model to explore the relationship between social pressure, environmental commitment, green economy incentives, supply chain relationship management, sustainable supply chain design, and circular economy capabilities (Centobelli et al., 2021).

Most Cited Articles on GSCM in SMEs

Table 4 displays the ten articles with the highest number of citations, published between 2007 and 2024, relating to green supply chain management (GSCM) in small and medium enterprises (SMEs). The total citations of the ten articles ranged from 88 to 614, each published in seven different journals. The most cited article, written by Mathiyazhagan K (614 citations), was titled "An ISM approach for the barrier analysis in implementing green supply chain

management" and was published in 2013 in the Journal of Cleaner Production with an average of 51.17 citations per year. The article identified the most dominant barriers to implementing green supply chain management. The findings can help industries ease the implementation of green concepts in their supply chains by removing these dominant barriers.

The second most cited article, written by Gupta H (399 citations), is titled "Supplier selection among SMEs based on their green innovation ability using BWM and fuzzy TOPSIS" and was published in 2017 in the Journal of Cleaner Production with an average of 49.88 citations per year. This article is a specialized review that addresses supplier selection among SMEs (small and medium enterprises) based on their green innovation ability.

Table 4. The Top Ten Articles Cited in Studies on GSCM in SMEs

SCR	Authors	Title	Years	Journal	Cited by	TC per year
1st	Mathiyazhagan K	An ISM approach for the barrier analysis in implementing green supply chain management	2013	Journal of Cleaner Production	614	51,17
2nd	Gupta H	Supplier selection among SMEs based on their green innovation ability using BWM and fuzzy TOPSIS	2017	Journal of Cleaner Production	399	49,88
3rd	Lee SM	Green supply chain management and organizational performance	2012	Industrial Management & Data Systems	284	21,85
4th	Zhou F	Sustainable recycling partner selection using fuzzy DEMATEL-AEW-FVIKOR: A case study in small-and-medium enterprises (SMEs)	2018	Journal of Cleaner Production	127	18,14
5th	Yacob P	An empirical investigation of green initiatives and environmental sustainability for manufacturing SMEs	2019	Journal of Manufacturing Technology Management	112	18,67
6th	Mathiyazhagan K	Application of analytical hierarchy process to evaluate pressures to implement green supply chain management	2015	Journal of Cleaner Production	110	11,00
7th	Ilyas S	Unleashing the role of top management and government support in green supply chain management and sustainable development goals	2020	Environmental Science and Pollution Research	108	21,60

SCR	Authors	Title	Years	Journal	Cited by	TC per year
8th	Centobelli P	Pursuing supply chain sustainable development goals through the adoption of green practices and enabling technologies: A cross-country analysis of LSPs	2020	Technological Forecasting and Social Change	105	21,00
9th	Namagembe S	Green supply chain practice adoption and firm performance: manufacturing SMEs in Uganda	2019	Management of Environmental Quality	90	15,00
10th	Bag S	Effect of eco-innovation on Green Supply Chain Management, Circular Economy Capability, and Performance of Small and medium enterprises	2022	Journal of Business Research	88	29,33

Collaboration Network Analysis

In this study, we used a full-count approach in VOSviewer to observe the track record of authors, institutions, and countries. The maximum limit of authors per article was set at 25, and approximately 164 authors fulfilled this requirement. We put the minimum number of documents produced by each author at twice the total of 164 authors, and only nine met this criterion for analysis. Figure 5 illustrates the interaction between authors; nine clusters contain multiple authors. However, the nine author clusters do not have a collaboration network.
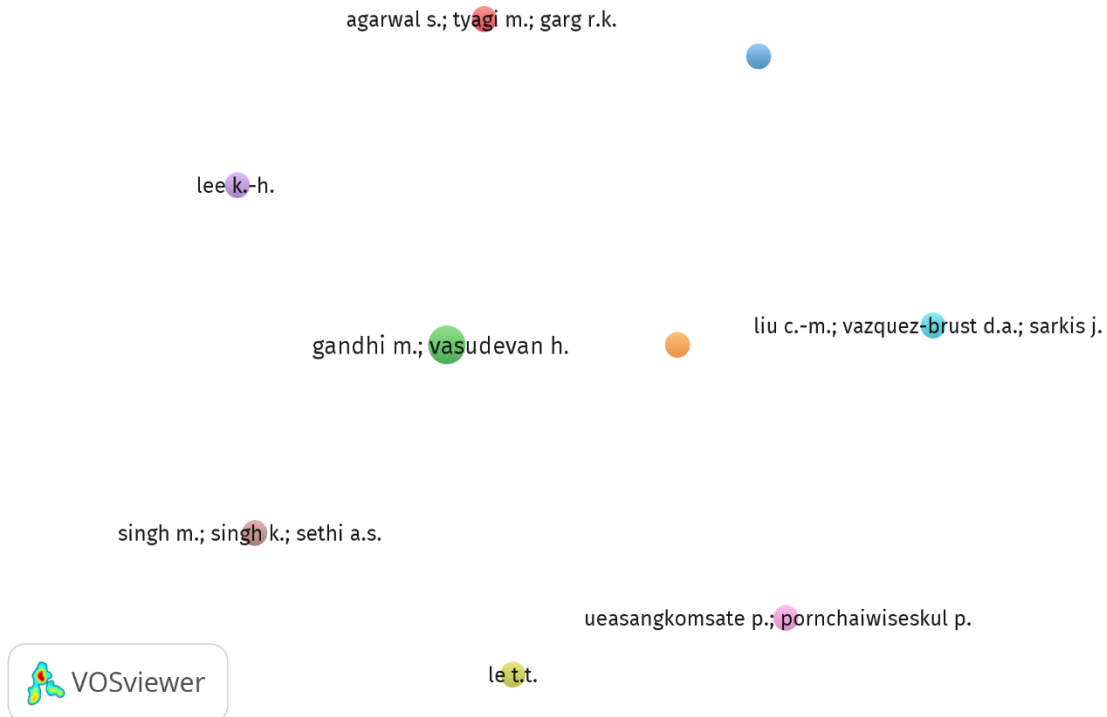

Figure 5. Collaborative Network Analysis of Authors

Furthermore, the maximum number of institutions allowed was set at 25 institutions per article. The minimum number of articles and citations obtained from the 368 universities that met the criteria were set at 2 and 0, respectively. Only 4 of the 21 institutions were linked, including Cranfield School of Management, Cranfield University, Cranfield Management School, the University of Sheffield, Sheffield, Bristol Business School, the University of the West of England, Bristol and Management School, and the University of Liverpool. Figure 6 illustrates the relationship between these institutions.
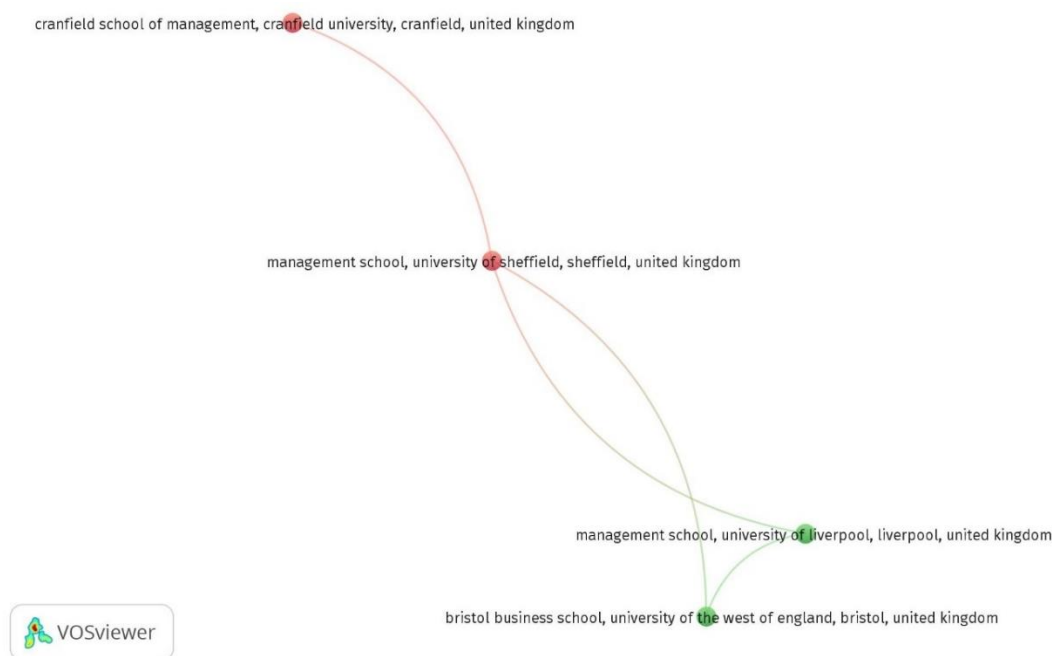

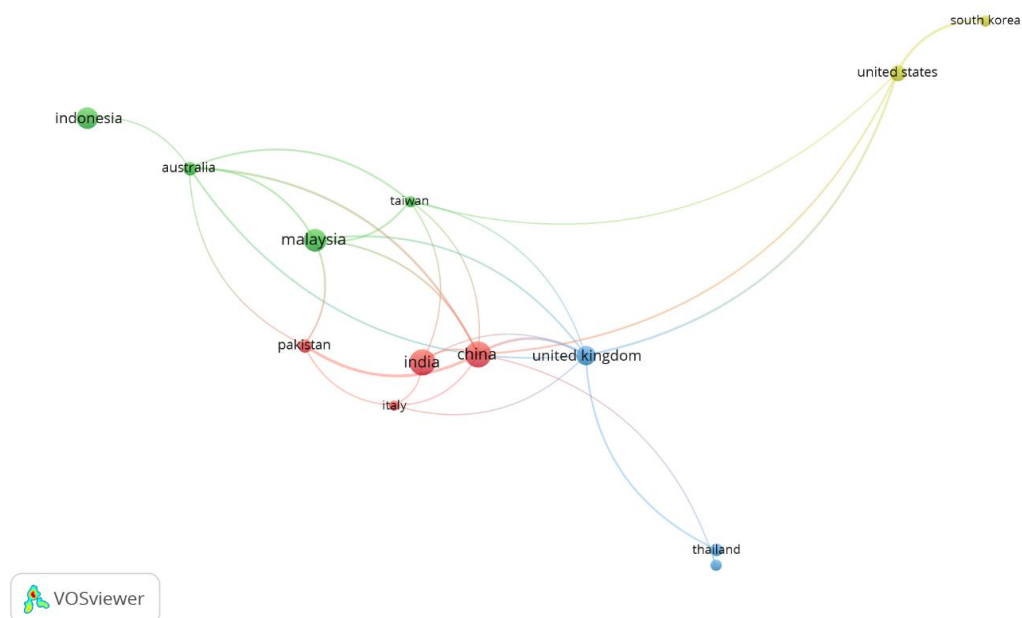**Figure 6. Collaborative Network Analysis of Institutions**

Figure 7. Collaborative Network Analysis of Countries

Furthermore, the maximum number of countries allowed was set at 25 countries per article. The minimum number of articles and citations obtained from 13 of the 45 countries claimed to fulfil

the criteria were set at 5 and 0, respectively. However, the 13 countries were grouped into four groups based on the level of co-occurrence. Countries of the same colour (within a group) are connected. The size of the country circle represents the number of research articles produced, and the scale of cooperation is shown by the thickness of the connecting line (literature). This connecting line, called link strength, is used to evaluate the degree of collaboration between the two terms (Dirpan et al., 2023).

In the first group, India, China, Pakistan, and Italy tend to collaborate on joint publications. Furthermore, the second group of Malaysia, Indonesia, Australia, and Taiwan collaborate in joint publications. The third group is filled with joint publication collaborations between the United Kingdom, Thailand, and Vietnam. The fourth group only has two countries collaborating on joint publications, namely South Korea and the United States. Based on Figure 7, the top three institutions with the highest total link strength are China 8, Australia 6, and Malaysia, with 8, 6, and 5 links, respectively.

Co-occurrence Analysis

Co-occurrence analysis is used to highlight disparities and current trends and to track scientific research progress (Dirpan et al., 2023). Figure 6 displays the occurrence of author keywords tested using VOSviewer. The size of the circles indicates the number of associated publications, while the distance between the circles gives an idea of the relationship between frequently co-occurring terms. This co-occurrence analysis uses the full-count method. The minimum occurrence of a keyword was set at five times out of a total of 978 keywords, and only 66 keywords met the analysis criteria, which were then divided into nine clusters.

Furthermore, the information in Table 5 outlines the top 10 keywords ranked by total occurrences and link strength. Figure 8 shows the clustering of terms frequently used by authors in bibliometric search-related works over the past 21 years. The most common keywords are supply chain management, green supply chain management, SMEs, environmental management, and sustainable development, with 79, 75, 37, 35, and 31 occurrences and 475, 342, 174, 229, and 178 total link strength, respectively.
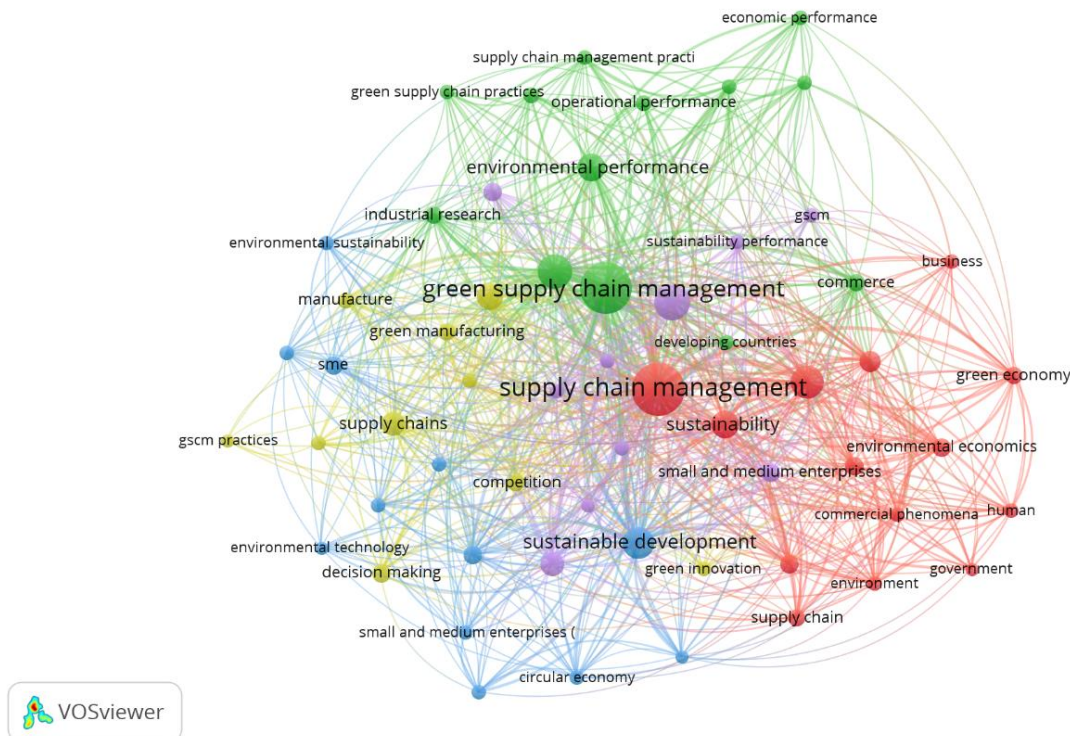

Figure 8. Cluster of Keywords

Table 5. The Most Used Keywords (Rank Based on Total Link Strength)

SCR	Keywords	Occurrences	Total Link Strength
1	Supply Chain Management	79	475
2	Green Supply Chain Management	75	342
3	SMEs	37	174
4	Environmental Management	35	229
5	Sustainable Development	31	178
6	Environmental Performance	22	107
7	Commerce	9	92
8	Manufacturing	13	79
9	Green Economics	11	75
10	Industrial Research	9	69

Furthermore, Figure 9 displays the development of keywords based on the study of green supply chain management (GSCM). GSCM oriented towards SMEs was warmly discussed in 2019. Based on the green and yellow colour patterns in the VOSviewer output, several keywords, such as small and medium enterprises, humans, technology adoption, circular economies, trade, and business, are currently discussed.
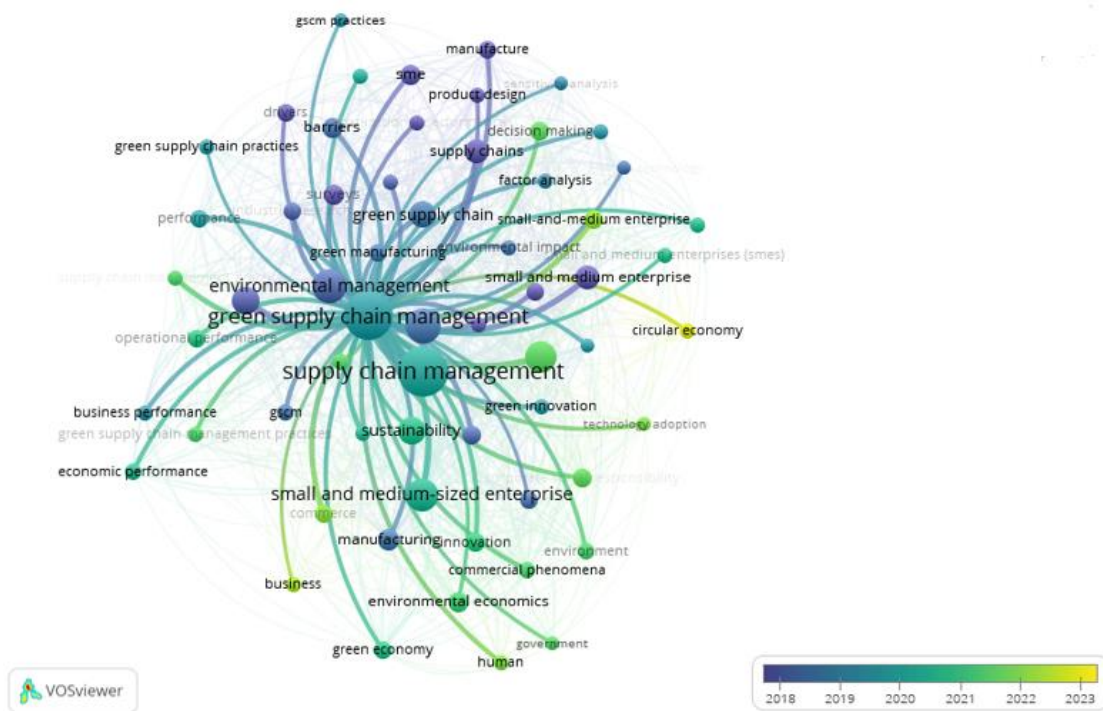

Figure 9. Network Development of Keywords Based on Studies on Green Supply Chain Management (GSCM) in Small and Medium Enterprises (SMEs)

Challenges and Future Perspectives

The body of scientific evidence confirms that research on Green Supply Chain Management (GSCM) in the context of SMEs offers promising prospects that need further exploration. GSCM positively impacts the development of SMEs with resource optimization, improved product quality, compliance with environmental regulations, access to new markets, and enhanced business reputation. A focus on the practical application of GSCM in SMEs is needed, including implementation strategies, identification of barriers, and formulation of a framework as a guide to strengthen this research trend for practitioners and researchers. With a deeper understanding and proper implementation, GSCM integration can enhance

the sustainability and competitiveness of SMEs in the global market.

Given the various constraints and limited capabilities of SMEs (small and medium enterprises), the success parameters of sustainable GSCM implementation depend on the characteristics and types of SMEs. Therefore, to achieve the desired sustainable GSCM performance, appropriate strategies and solutions must be implemented. Recent research trends, as shown by the keyword network development analysis (Figure 8), indicate opportunities to investigate the application of circular economy models in SMEs in achieving sustainable GSCM. According to Jia, Yin, Chen, & Chen (2020), the adoption of green supply chain management (GSCM) and circular economy (CE) results in sustainable growth and development.

In addition, technological aspects must also be considered for the successful implementation of sustainable GSCM in SMEs. In the digital era, SCM is becoming increasingly important in business operations, and SMEs are essential actors in the business supply chain (Kitchot et al., 2021). The next element, which is equally crucial, is human resources. Human resources are essential as strategic partners in helping companies develop the capabilities to implement corporate strategies such as SCM (Kitchot et al., 2021).

CONCLUSION

While this research makes a meaningful contribution, some limitations must be recognized. When interpreting the results of bibliometric analyses, it is essential to understand the inherent methodological limitations. These limitations are part and parcel of the research process and cannot be avoided entirely without a perfect and comprehensive search strategy. In addition, the search methodology used also has its limitations. Specifically, this study only utilized literature in the Scopus database, so articles published in journals not listed in Scopus were not evaluated. Although Scopus is recognized as a reliable and comprehensive bibliometric analysis database, this limitation must be considered. For future research, considering the use of additional databases may help verify the generalisability of the findings, e.g., WoS.

In addition, the number of documents analyzed in this study is relatively small, only 133, because it is limited to documents with article types. Future research may consider including other documents, such as conference papers, conference reviews, and book chapters. Despite these limitations, the findings of this study can still make a meaningful contribution to the discussion of legitimate scientific literature on the topic of "green supply chain management (GSCM) in the context of SMEs".

REFERENCES

Agnusdei, G. P., & Coluccia, B. (2022). Sustainable agrifood supply chains: Bibliometric, network and content analyses. *Science of the Total Environment*, *824*, 153704.

Assis, T. I., & Gonçalves, R. F. (2022). Valorization of Food Waste by Anaerobic Digestion: A Bibliometric and Systematic Review Focusing on Optimization. *Journal of Environmental Management*, *320*. https://doi.org/https://doi.org/10.1016/j.jenvman.2022.115763

Boukid, F. (2022). Smart food packaging: An umbrella review of scientific publications. *Coatings*, *12*(12), 1949.

Centobelli, P., Cerchione, R., Esposito, E., & Passaro, R. (2021). Determinants of the transition towards circular economy in SMEs: A sustainable supply chain management perspective. *International Journal of Production Economics*, *242*, 108297.

Dirpan, A., Ainani, A. F., & Djalal, M. (2023). A bibliometrics visualization analysis of active packaging system for food packaging. *Heliyon*.

El Baz, J., & Iddik, S. (2022). Green supply chain management and organizational culture: a bibliometric analysis based on Scopus data (2001-2020). *International Journal of Organizational Analysis*, *30*(1), 156–179.

Fahimnia, B., Sarkis, J., & Davarzani, H. (2015). Green supply chain management: A review and bibliometric analysis. *International Journal of Production Economics*, *162*, 101–114. https://doi.org/10.1016/j.ijpe.2015.01.003

Falagas, M. E., Pitsouni, E. I., Malietzis, G. A., & Pappas, G. (2008). Comparison of PubMed, Scopus, web of science, and Google scholar: strengths and weaknesses. *The FASEB Journal*, *22*(2), 338–342.

Garrido-Romero, M., Aguado, R., Moral, A., Brindley, C., & Ballesteros, M. (2022). From traditional paper to nanocomposite films: Analysis of global research into cellulose for food packaging. *Food Packaging and Shelf Life*, *31*, 100788.

Gonçalves, H., Magalhães, V. S. M., Ferreira, L. M. D. F., & Arantes, A. (2024). Overcoming Barriers to Sustainable Supply Chain Management in Small and Medium-Sized Enterprises: A Multi-Criteria Decision-Making Approach. *Sustainability*, *16*(2), 506.

Jia, F., Yin, S., Chen, L., & Chen, X. (2020). The circular economy in the textile and apparel industry: A systematic literature review. *Journal of Cleaner Production*, *259*. https://doi.org/10.1016/j.jclepro.2020.120728

Kim, S. T., Lee, H.-H., & Lim, S. (2021). The Effects of Green SCM Implementation on Business Performance in SMEs: A Longitudinal Study in Electronics Industry. *Sustainability*, *13*(21), 11874.

Kitchot, S., Siengthai, S., & Sukhotu, V. (2021). The mediating effects of HRM practices on the relationship between SCM and SMEs firm performance in Thailand. *Supply Chain Management: An International Journal*, *26*(1), 87–101.

Kot, S. (2018). Sustainable supply chain management in small and medium enterprises. *Sustainability*, *10*(4), 1143.

Kusi-Sarpong, S., Gupta, H., Khan, S. A., Chiappetta Jabbour, C. J., Rehman, S. T., & Kusi-Sarpong, H. (2023). Sustainable supplier selection based on industry 4.0 initiatives within the context of circular economy implementation in supply chain operations. *Production Planning & Control*, *34*(10), 999–1019.

Le, T. T. (2022). How humane entrepreneurship fosters sustainable supply chain management for a circular economy moving towards sustainable corporate performance. *Journal of Cleaner Production*, *368*, 133178.

Luthra, S., & Mangla, S. K. (2018). When strategies matter: Adoption of sustainable supply chain management practices in an emerging economy's context. *Resources, Conservation and Recycling*, *138*, 194–206.

Maditati, D. R., Munim, Z. H., Schramm, H. J., & Kummer, S. (2018). A review of green supply chain management: From bibliometric analysis to a conceptual framework and future research directions. In *Resources, Conservation and Recycling* (Vol. 139, pp. 150–162). https://doi.org/10.1016/j.resconrec.2018.08.004

Moktadir, M. A., Ali, S. M., Rajesh, R., & Paul, S. K. (2018). Modeling the interrelationships among barriers to sustainable supply chain management in leather industry. *Journal of*

Cleaner Production, *181*, 631–651. https://doi.org/10.1016/j.jclepro.2018.01.245

Mongeon, P., & Paul-Hus, A. (2016). The journal coverage of Web of Science and Scopus: a comparative analysis. *Scientometrics*, *106*, 213–228.

Niño-Amézquita, J., Legotin, F., & Barbakov, O. (2017). Economic success and sustainability in pharmaceutical sector: a case of Indian SMEs. *Entrepreneurship and Sustainability Issues*, *5*(1), 157–168.

Shekarian, E., Ijadi, B., Zare, A., & Majava, J. (2022). Sustainable supply chain management: a comprehensive systematic review of industrial practices. *Sustainability*, *14*(13), 7892.

Sinha, A., Priyadarshi, P., Bhushan, M., & Debbarma, D. (2021). Worldwide trends in the scientific production of literature on traceability in food safety: A bibliometric analysis. *Artificial Intelligence in Agriculture*, *5*, 252–261.

Sroka, W., Cygler, J., & Gajdzik, B. (2014). Knowledge transfer in networks–the case of steel enteprises in Poland. *Metalurgija*, *53*(1), 101–104.

von Berlepsch, D., Lemke, F., & Gorton, M. (2024). The importance of corporate reputation for sustainable supply chains: A systematic literature review, bibliometric mapping, and research agenda. *Journal of Business Ethics*, *189*(1), 9–34.

Zhang, N., & Zhao, Y. (2022). Green supply chain management in the platform economy: a bibliometric analysis. *International Journal of Logistics Research and Applications*, *25*(4–5), 639–655.

Zhong, M., & Lin, M. (2022). Bibliometric analysis for economy in COVID-19 pandemic. *Heliyon*, *8*(9).