

Bibliometric Analysis: Research on Green Supply Chain Management

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Abstract

Research on green supply chain management (GSCM) has recently become increasingly popular for every industry. The importance of this research has been examined in the area of green supply chain management (GSCM), trends in research, its authors and affiliates, and research possibilities for green supply chain management (GSCM). This study aims to describe forecasts related to the subject matter of the GSCM study, which will assess the performance of scientific journals with bibliometric analysis and also provide opportunities for Green Supply Chain Management (GSCM) studies. The data obtained from the Scopus database is metadata from the Green Supply Chain Management Journal (GSCM) 2015-2020 source. For data analysis purposes, all data information is transferred to CSV format, especially for VOSviewer data coincidence. There are up to 447 successful document metadata results articles. The study findings show that excavation is implementation dependent and SCM is the dominating subject in GSCM, while research on environmental performance and company achievement is the trend towards 2018. In this analysis, the analysis shows that excavation is dependent. GSCM research offers significant promise and prospects. Green supply chain management. Because it is easy to access several electronic data sources. Green Supply Chain Management (GSCM) is a field that has great opportunities for research to participate in the collaboration of various disciplines.

Keywords

bibliometric analysis; green supply chain management (GSCM); scopus



I. Introduction

During the time covered in this study, a number of studies have reviewed the literature on GSC. Each of these papers is a distinct analysis of the GSC literature. For example, Srivastava (2007), due to the fact that a comprehensive GSCM reference is needed to assist academics, researchers and practitioners, has taken an integrated and innovative approach to the subject of green supply chain management (GSCM).

Green Supply Chain Management (GSCM) research will be available to address the difficulties in companies as a systematic study of new environmental practices. GSCM is an environmental innovation that ideally integrates environmental thinking in supply chain management. GSCM plays an important role in influencing every company that participates in the environmental impact of supply chain activities (Chin et al., 2015). The implementation of GSCM in company activities ensures that business performance can be improved. Improved environmental performance can be managed by reducing air pollutants, sewage emissions, solid waste and hazardous materials. GSCM practices can be controlled (Green et al., 2012).

With regard to studies the GSCM subjects are not extensively associated with the more evenly distributed themes, including the GSCM studies. However, there has also been talk of GSCM, which will eventually shift market share and increase profitability as a way of preserving the environment. The economic condition of the population is a condition that describes human life that has economic score (Shah et al, 2020). According to (Bowen et al., 2001), when companies can gain economic and operational benefits by implementing green initiatives, they actually introduce GSCM in their companies. (Chiou & al., 2011) argue that producers will have strong incentives and will adopt green technologies through the establishment of effective environmental practices, transforming their commodities in an environmentally friendly manner. Companies should implement well-designed environmental concepts into their supply networks to stimulate innovation and creativity in the production of green products.

The purpose of this study is to provide a representation of the bibliometric scientific mapping/research mapping we have heard of. Bibliometric research is a technique for building network models that lead to problems that are key subjects in a particular field of study, how these subjects are interrelated and how topics improve over time (Waltman et al., 2010). The purpose of this study is to find out where research is in the area of GSCM, frequent research subjects, GSCM research trends, leading authors and prospective partnerships. (Eck & Waltman, 2014), said you can use a visualization approach for bibliometric network analysis, in particular for mapping and classifying relationships between newspapers, co-authors, researchers and keyword occurrences, for research mapping to facilitate research mapping.

II. Review of Literature

2.1 Green Supply Chain Management Practices (GSCM)

GSCM is described as participation in the environmental perspective of the supply chain management process which involves product design, procurement and selection of materials, manufacturing processes, distribution and management of final products to customers (Srivastava, 2007). This study identified GSCM as a number of possible methods to prevent and reduce environmental problems during the final product manufacturing process. In this sense, it refers to manufacturing businesses that are considered to contribute potentially to the environment. GSCM techniques for four components were investigated by researchers: internal environmental management, green procurement, collaboration with clients, and reverse logistics.

2.2 Internal Environmental Management

Internal environmental management refers to environmental sustainability practices that develop from the strong involvement and support of managers and supervisors as a strategic need in business (Zhu & Sarkis, 2007). In this study, the researcher characterizes internal environmental management as an area of support and dedication to the company's top management, the existence of an environmentally friendly operating system or GSCM.

2.3 Environmentally Friendly Procurement

Related to environmental procurement, including the use of recycled materials in the procurement strategy, contribute to purchasing efficiency initiatives. Green supply is an alternative to environmental and business economic concepts to achieve preferential products and services that minimize environmental impact, while at the same time ensuring that the Products or materials procured are solely in accordance with the environmental

objectives of the buyer, e.g. minimizing sources of waste, increasing the use of recycling , limiting resources and substituting materials (Justice et al., 2006). This study refers to the supplier's credentials in line with the environmental management system and the provision of environmentally friendly raw materials in partnership with agencies.

2.4 Customer Environmental Cooperation

Customer environmental cooperation is defined as collaboration with clients aimed at ensuring that, in addition to complementing the customer's environmental management system, the environmental focus is met and informed by the customer, to reduce environmental impacts in appropriate activities (Theyel , 2001). In this study, the researcher defines customer collaboration as consumer collaboration in design. Develop and share ideas, expertise or technical information in producing environmentally friendly goods that meet environmental and environmental criteria. Development is a systematic and continuous effort made to realize something that is aspired. Development is a change towards improvement (Shah, M. et al. 2020).

2.5 Reverse Logistics

Reverse logistics is one method of getting products from end users to add value and deliver correct quantities. Reverse logistics activities include recovery, filtration, recovery, redistribution, and elimination. And also leads to the transfer of goods, resources or packaging from customers or suppliers (Wijewickrama et.al, 2020). In his research, the process or reverse logistics activity is defined as a process or activity after the final product is returned to the consumer to maintain efficiency and preserve the natural environment, including aspects of recycling, reuse, or reproduction. In other words, reverse logistics is a process.

III. Research Method

3.1 Scopus Filtering

The Scopus 2015-2020 search engine is used to find comprehensive literature on GSCM theory in March 2021. Scopus is one of the most comprehensive databases of citations and abstract literature, such as scientific works, books, and lectures. The initial investigation found 2183 newspapers which, after eliminating material not categorized as articles, reviews, letters or notes, were eventually reduced to 447. Thus, the final number of analytical documents was 447.

The purpose of this research project is to obtain and analyze data from well-known magazines published scientific papers. Research focuses on green supply chain management. In this regard, the following research questions will be answered by this study:

- a. How many papers cover green supply chain management today?
- b. What is the idea of managing a green supply chain?
- c. What are the future research plans on green supply chain management?

3.2 VOS Viewer Analysis

This study also displays graphic images of bibliographic materials using VOS viewer software to complete the analysis (van Eck & Waltman, 2010). The program collects information stored in excellent format (CSV), creating maps based on a combination of bibliography, codecision, citations, co-quotations, and shared keywords (Merigó et al. 2016; Wang et al. 2018).

The research process also has stages, especially in step 1 of topic selection. The selection period is between 2015 and 2020 for the selection of the required documents. Therefore, this study only selected certain publications for one year. The second step is to select the document type. Document type entries are limited to articles, lectures, journals, books and conference reviews. Third-stage publication is limited to all data sources reaching the final stage of publication and thus does not include publications that are being evaluated for complete information purposes. In stage four, the Keyword filter is limited to "Green Supply Chain Management"

IV. Results and Discussion

4.1 Documents per Year

This shows the trend in the number of articles published for 2015-2020. Although the discipline continues to evolve and evolve, the results reveal that geometric growth occurred in publications. Preliminary figures show that publication was made possible by 446 journals. It is clear that the trend remains strong and increasing as current research emphasizes the need to understand how gscm practices in recent years have changed their impact on organizations (Balakrishnan, 2018) and (Jing et al., 2019). Organization must have a goal to be achieved by the organizational members (Niati et al., 2021).

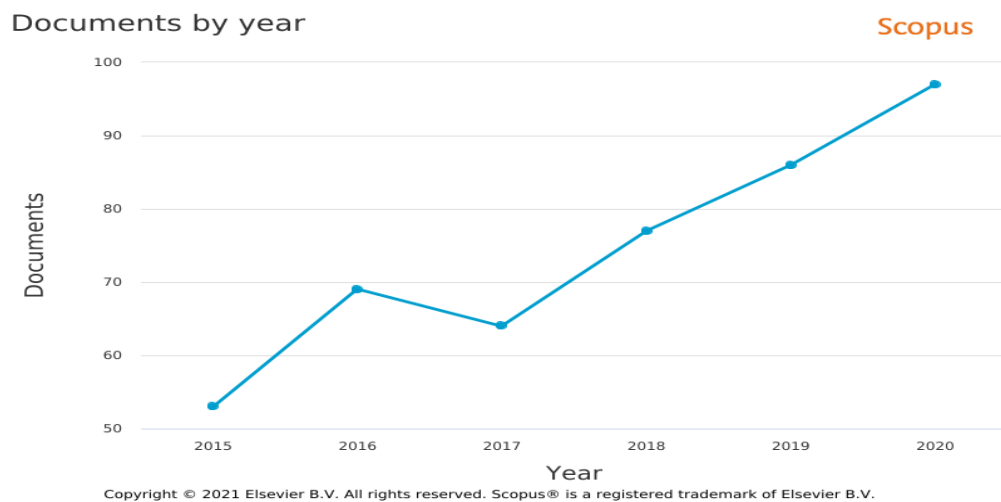


Figure 1. Documents by Year

4.2 Subject Area

Business, Administration and Accounting is the leading publishing sector for that field with 447 publications from 2015 to 2020 based on the number of green supply chain management articles published. Followed by 223 and 109 engineering and environmental sciences. Fourth, 100 published articles were produced by the energy sector and 88 by computer science. This shows that business, management and accounting are disciplines that receive more emphasis in this type of education.

Table 1. Top 5 Subject Areas of Green supply chain management

Subject Area	Number of Publications
Business, Management and Accounting	447
Engineering	223
Environmental Science	109

Energy	100
Computer Science	88

4.3 Geographical Area Distribution

The following chart shows the highest developing countries in the area of supply chains for sustainable energy between 2015 and 2020. Indian journals are the 89th most frequently published. This shows that the country is leading the field of Green Supply Chain Management in the field of research. Second, China has produced a total of 79 publications followed by 48,47,34 publications by America, Britain and Iran. The list of countries with the largest volume of publications closes with 32,32,21,19 and 18, as well as Brazil, Malaysia, Indonesia, Australia and France.

Table 2. Top 5 Documents by Country

Country	Number of Publications
India	89
China	79
America	48
English	47
Iran	34

4.4 Top journal

In the figure above, the supply chain administration has a number of leading magazines and publishing institutions. These are clean manufacturing journals, international supply chain management journals, international production business journals, international logistics systems journals and production planning management and control journals. production plan. The image above states in the Clean Production Journal that, compared to other journals that have had less than two research publications per year since 2015, it produces the highest number of documents in the area of Green supply chain management. An average of 17 papers are produced in the Journal of Cleaner Production each year. Years based on 2015-2020 scopus data

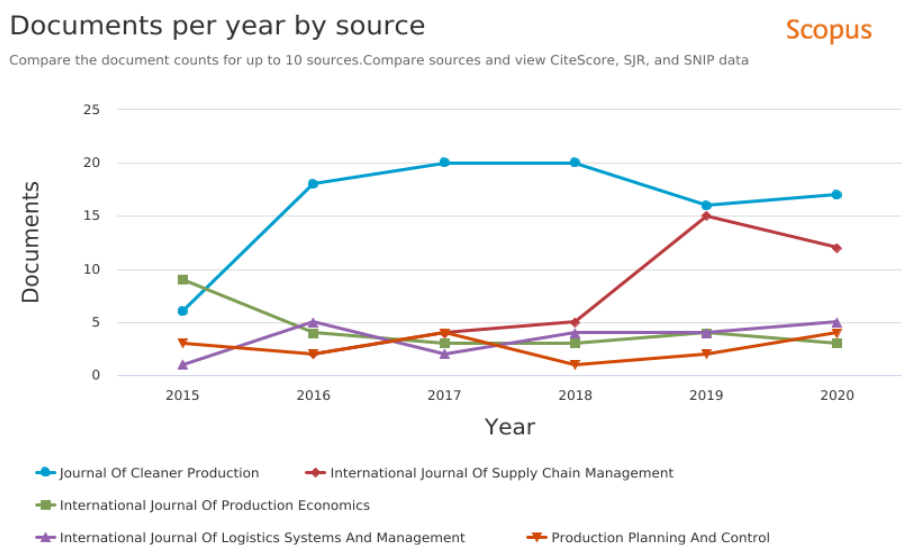


Figure 2. Documents per year by source

4.5 Documents by author

The figure below shows that between 2015 and 2020 an average of 4 to 11 articles were produced by the list of top authors in the field of Green supply chain management. 11.8 and 6 papers were produced by the top three authors Sarkis, mathiyazhagan and kant, while the other top seven contributed 2-6 works.

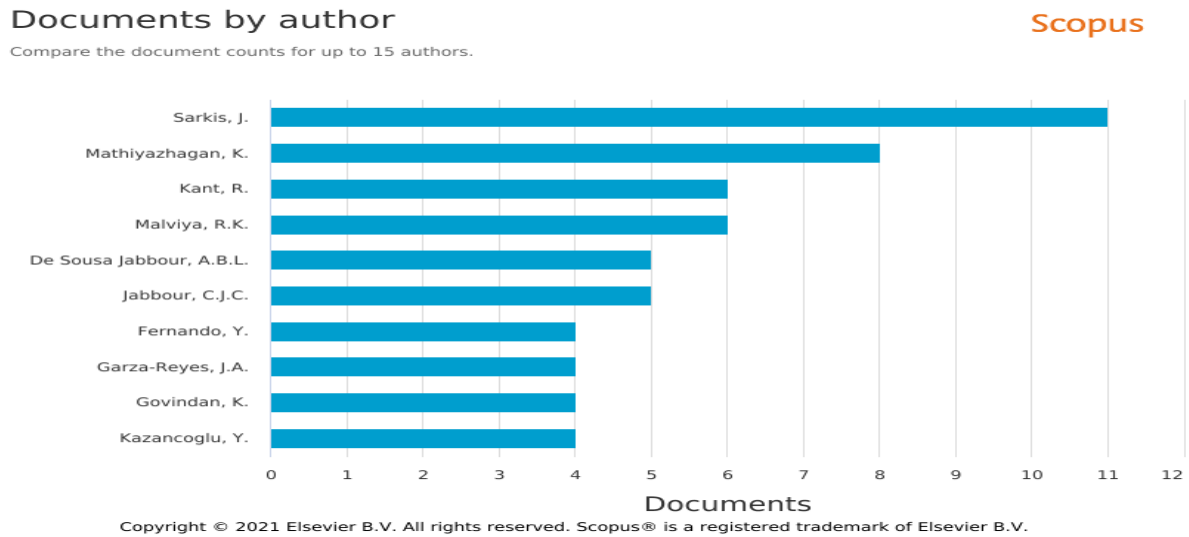


Figure 3. Publication of the author

4.6 Link to Network

The connection of keywords to the cluster generated through each node following analysis using the Voss viewer research tool is illustrated in Figure 4. The minimum number of keyword occurrences is 5 so that the criteria are met by 96 keywords. Green supply chain and supply chain management are the most commonly used keywords. 5 groups are created as indicated by the various color nodes.

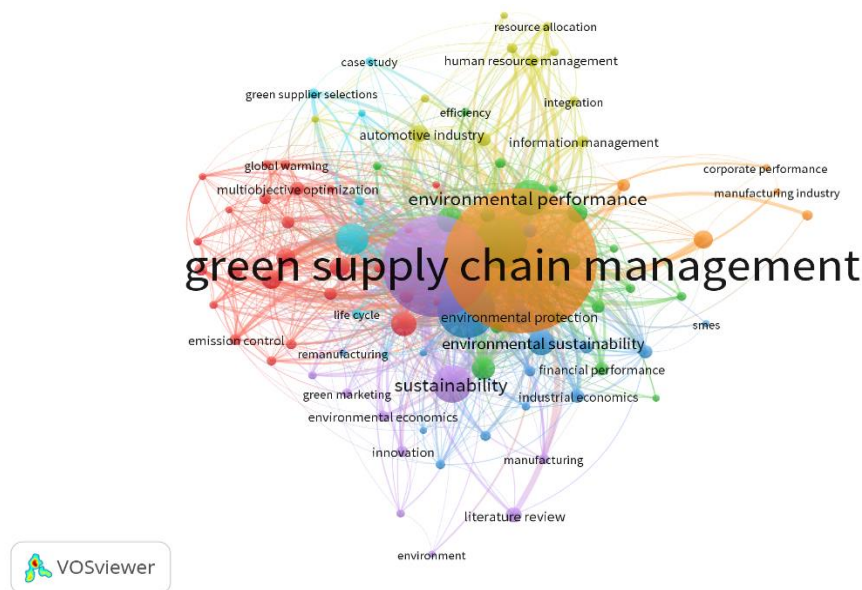


Figure 4. Visualization of the Keyword Co-occurrence Network

4.7 Bibliography Clutch

Bibliographic examination of coupling filters from 63 countries using VOSviewer was taken from 28 countries. This is because the criteria are limited to a minimum of 5 papers per country. As shown in Figure 5, 4 clusters were produced. Nodes of the same color are members of the same cluster. Countries are more related than members of various clusters to each other. For example, China is related to India and Brazil and therefore there are more ties between them. Research by (Pinto et al., 2018) found a good relationship with the work of researchers who found that this study evaluates the practice and management of gscm in industry in Brazil, Russia, India, China and others in the Scopus database, as published scientific literature.

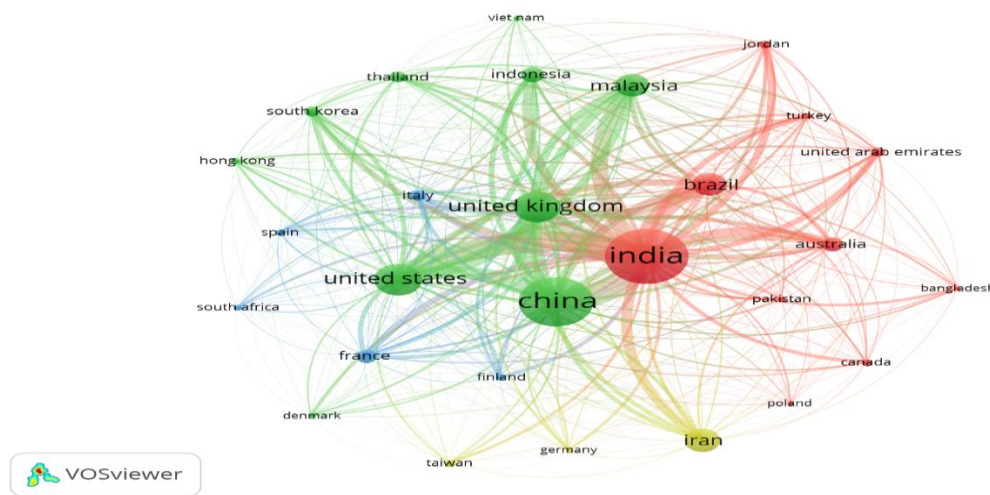


Figure 5. Bibliography Clutch

V. Conclusion

The purpose of this research article is to examine the development of Green supply chain management research and its relevance in the field of idea study. This article is based on bibliometric analysis. Interest in Green supply chain management is increasing based on the study findings. Among the top five subject areas covered in this issue are business governance and accountability. India follows China in terms of leading countries in the sector in publishing and contribution. The Journal of Cleaner Production is the main editorial. Sarkis, Mathiyazhagan most important authors of the largest number of papers.

Furthermore, it is necessary for future studies to examine theories of green supply chain management in relation to supply chain management and how these theories can be integrated to make significant progress in sustainable solutions to overcome the limitations of studies in this sector. The study also found that bibliographies in different countries were combined to show incorrect associations with the study. This void reduces the number of research publications available in the main topic sources. Therefore, future research should also focus on developing inter-regional cooperation to ensure better, more comprehensive and environmentally friendly supply chain management to respond to pressing problems and demands of many stakeholders.

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