# Interrelationship Between Green Supply Chain Management and Green Innovation in Sustainability: A Systematic Literature Review

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**ABSTRAK**

Tren GSCM telah popular di banyak negara-negara maju dengan tujuan mengurangi dampak negatif dari GSCM terhadap kestabilan lingkungan. GSCM terhubung dengan beberapa variabel lain seperti Green Innovation dalam Sustainability. Banyak penelitian baik secara teoritis maupun empiris mengenai topik. Namun, di negara berkembang masih sedikit penelitian dan pengetahuan mengenai GSCM, GI dan pengaruh terhadap Sustainable Performance. Oleh karena itu, studi ini bertujuan untuk melakukan untuk memperkaya literatur saat ini mengenai penelitian dan praktik. Penelitian ini membantu dalam melakukan penelitian yang sistematis terhadap artikel-artikel yang telah dipublikasikan, dengan menggunakan systematic literatur review untuk menganalisis kumpulan data besar terkait topik. Selain itu, hasil studi ini akan membantu para peneliti selanjutnya untuk mendapatkan wawasan tentang tren perkembangan penelitian saat ini dan tema penelitian dalam bidang GSCM, GI, dengan Sustainability.

*Kata kunci*: Green Supply Chain, GSCM, Supply Chain Sustainability, Green Innovation, Sustainability, Systematic Literature Review, VOSViewer

**ABSTRACT**

The trend of GSCM has gained popularity in many developed countries with the intention of mitigating its adverse effects on environmental stability. GSCM is linked to several other variables such as Green Innovation in Sustainability. There have been numerous theoretical and empirical studies on the topic. However, in developing countries, there is still limited research and knowledge about GSCM, GI, and their influence on Sustainable Performance. Therefore, this research aims to enrich the current literature on research and practices. It helps in systematically researching published articles, using systematic literature review to analyze large datasets related to the topic. Additionally, the results of this study will aid upcoming researchers in gaining insights into current research trends and themes in the field of GSCM, GI, and Sustainability.

*Keywords*: Green Supply Chain, GSCM, Supply Chain Sustainability, Green Innovation, Sustainability, Systematic Literature Review, VOSViewer

## 1. INTRODUCTION

Resource depletion and environmental degradation have presented challenges for businesses. The manufacturing sector, with its extensive use of resources and energy, is a significant contributor to global environmental changes. While some green supply chain methods are being implemented in Southeast Asian nations like Indonesia, the Philippines, Singapore, Thailand, and Malaysia (Wang et al. 2021). Global supply chains play a significant role in causing more than 80% of emissions from greenhouse gases generated by companies and 90% of their overall negative environmental impacts, including on water, geological resources, air, biodiversity, and land. (Bové and Swartz 2016). Thus, companies are under immense pressure to reduce the toxic pollution, emissions, and chemical spills by adopting environmentally sustainable practices, particularly in their supply chain operations (Rahman et al. 2022).

The term GSCM is still relatively new and in its early developmental stages in many developing economies. To successfully implement these practices, a better understanding of the driving factors behind

their adoption is needed. Researchers and practitioners have been investigating various aspects, challenges, and key success factors of GSCM practices within the manufacturing sector in foreign nations (Quintana et al. 2021). GSCM aims to reduce the negative impacts generated by company activities on society and the environment by minimizing resource use, pollution, emissions, and waste. This is expected to enhance the sustainable performance of the company (Ofori et al. 2022).

To secure sustainability in the environment, companies must enhance the methods they employ in research and manufacturing. In this context, Fernando suggests that companies in Southeast Asia should consider adopting Green Innovation and Green Supply Chain Management (GSCM) to achieve sustainable development. Green Innovation involves research efforts to improve products and business practices that diminish their adverse effects on society and the environment. (Le et al. 2022). GSCM has been proven to play a role in reducing negative environmental impacts across the supply chain without compromising operational quality, cost efficiency, reliability, or overall performance. By implementing GSCM practices, organizations can effectively minimize the environmental impact of their business activities while continuing to provide added value to customers (Wen et al. 2023). Green innovation involves research aimed at improving product and business practices to minimize negative impacts on society and the environment. At the same time, GSCM is a modern structured environmental technology that many organizations in South Asia consider an essential strategy to demonstrate their commitment to sustainable development (Le et al. 2024).

The goal of Green innovation is to generate new or improved products and processes that have a smaller negative impact on the environment and, in the long run, achieve harmonious development between the environment, society, and the economy (Al Mamun et al. 2018). Green innovation not only enables companies to produce environmentally friendly products and processes but also plays a crucial role in fulfilling social responsibilities and preventing competitors from imitating them, thereby gaining a first-mover advantage (Al-Swidi, Al-Hakimi, and Alyahya 2023). Studies in GSCM in developing countries remain limited. According to (Zhou et al. 2023), China and India have recently begun adopting environmental policies.

This study facilitates a systematic review of published articles by applying a systematic literature review approach. This method is used to analyze a large dataset related to the topic, identify leading countries, institutions, and journals in research on Green Supply Chain Management and Green Innovation in context of sustainability. Additionally, this study helps reveal the most productive publications and authors, highlight key keywords, and identify central themes, ensuring comprehensive and convincing findings for the audience. This article is

structured into four sections, the first part explains phenomena related to green supply chains, green innovation, and sustainability. The second part defines the research methodology and data sources used. The third part contains the results and analysis of the research questions posed. The fourth part discusses conclusions and provides recommendations for future research.

## 2. METHODS

Systematic Literature Review is a mechanical study that aids in gaining a global understanding of research areas in a specific field. Scopus is among the most extensive multidisciplinary databases containing scholarly articles in the social sciences. Moreover, Scopus is widely recognized as one of the leading databases for quantitative analysis (Silveira and Zilber 2017). Therefore, this article collects data from the Scopus database.

### 2.1. Data Source and Search Strategy

Data collection from sources using the Scopus database was conducted from March 29th to 30th, 2024. Previous studies have indicated that Scopus is the widest database in terms of abstracts and citations for leading academic research works, and it is more suitable for Systematic Literature Review analysis. Therefore, Scopus was chosen for this research because of its broad coverage and inclusion of studies in both science and non-science fields. Figure 1 shows the data sourcing process that involved inputting keywords "Green Supply Chain Management" OR "Green Supply Chain" OR "Supply Chain Sustainability" AND "Green innovation*" AND "Sustainable*" in the **TITLE-ABS-KEY** field, resulting in 56 documents. The second process involved filtering document type to "Article," resulting in 43 documents. The third process involved filtering by subject area, selecting areas such as Business, Management & Accounting, Environmental Science, Engineering, Decision Science, Computer Science, Energy, Social Sciences, and Economics, Econometrics & Finance, resulting in 40 documents. Further filtering was done for documents in English, resulting in 40 relevant documents. The final process involved checking relevant journals by reviewing abstracts, methods, and research models, resulting in 10 relevant journals.

Bibliometric analysis involves providing quantitative analysis of written publications. The application of various statistical software has provided advantages for this analysis, making the implementation of bibliometric studies simpler (Ellegaard and Wallin 2015). According to (Donthu et al. 2021) Bibliometric analysis offers advantages over ordinary summary statistics because it depicts the bibliometric and intellectual framework of a discipline through examining the social and structural connections among different facets of research, such as publications, country, authors, and institutions. A total of 40 documents obtained from the data filtering

process in the data collection stage will be used for bibliometric analysis to assist in conducting systematic literature review. In this research, Microsoft Excel and VOSViewer software are used. VOSViewer software aids in displaying large and easily interpretable bibliometric maps (Aria and Cuccurullo 2017). Furthermore, this tool can be used to perform linear regression, statistical analysis, and cluster analysis on documents that meet specific criteria.
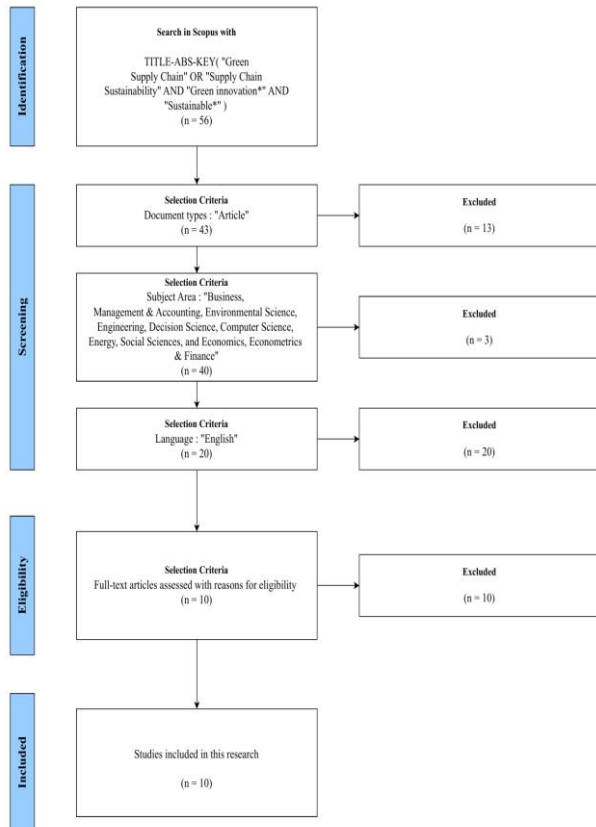


**Figure 1.** Systematic Literature Selection Process

## 3. RESULTS AND DISCUSSION

The research results are explained, and a comprehensive discussion is presented. This study shows the findings from the research questions using bibliometric analysis and VOSViewer for conducting systematic literature reviews.

### 3.1. Thematic Findings

Out of a total of 40 documents written over an 11-year period from 2011 to 2024, many articles have been published from various sources or publishers such as Emerald, MDPI, Springer, Taylor and Francis, and others. Figure 2 presents the pattern of ups and downs in publications on the topic of GSCM and GI in Sustainability. Starting from 2011 with 1 article, the highest increase occurred in 2023, where 12 documents were published. However, no articles were published in 2012. Figure 3 shows the mapping of countries publishing journals related to the topic, with China having 16 publications as the nation with the

greatest number of journals on GSCM, sourced primarily from the Journal of Cleaner Production with a total of 7 documents as shown in Figure 4. According to the initial data filtering, with the most common subject area being "Business, Management, and Accounting," which accounts for 25% as shown in Figure 5.
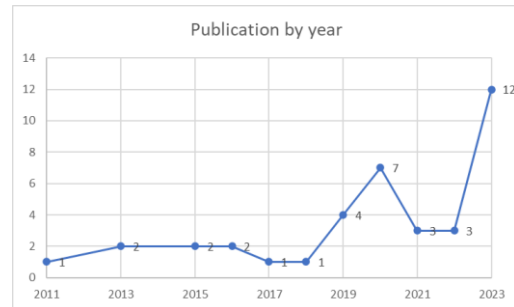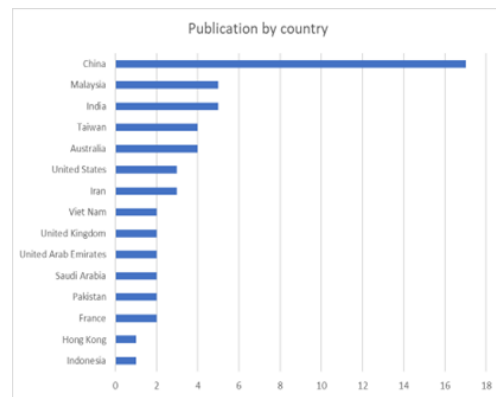


**Figure 2.** Publication by Year



**Figure 3.** Publication by Country



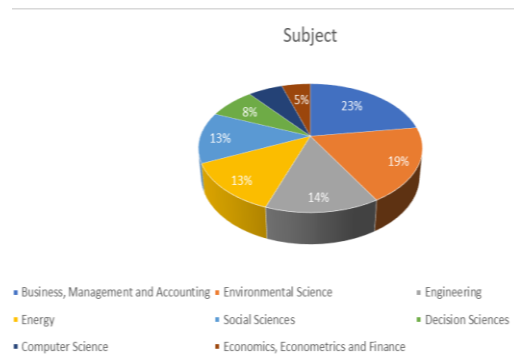**Figure 4.** Source of topic



**Figure 5.** Subject of topic

## 3.2. Co-word Analysis

Evaluating the co-occurrence of the same keywords by authors and indexes can provide significant insights into a research topic. Because VOSviewer is an efficient tool for examining keyword co-occurrence from bibliometric data (Fahimnia, Sarkis, and Davarzani 2015), This research utilizes this tool to conduct co-occurrence analysis of keywords. The authors of articles in this research sample contributed with 332 keywords. Figures 6 and 7 display the results of keyword co-occurrence using VOSViewer. The most frequently occurring keyword is "Sustainable development" with a count of 24 and a total link strength of 368. After conducting VOSViewer analysis, a total of 20 clusters were identified. For the keyword "Green Supply Chain Management" in cluster 13, "Green Innovation" in cluster 19, and "Sustainability" in cluster 20 are keywords that have recently been extensively researched, as evidenced by the analysis of VOSViewer clusters being predominantly green to yellow, indicating that research using these keywords has been conducted extensively from 2022 to 2024.

## 3.3. Co-Authorship Analysis

VOSviewer is a powerful tool for analyzing large datasets (Fahimnia et al. 2015), This indicates a strong collaborative network among the authors, where key researchers play a central role in scientific publications. As shown in Figure 9, the selected authors with the highest total link strength (6) include abaid, w.m.a.w., le, t.t., mokhtar, s.s.m., perumal, s., salimon, m.g., saoula, o., shaari, h., and yusr, m.m. Their high link strength suggests that they are the most influential contributors in the network, actively engaging in research collaborations. Meanwhile, other authors with a total link strength of 4, such as abdullah, r., abedelwahed, n.a.a., ahmadi, s., and others, also play a role in co-authorship but may have fewer direct connections or are involved in smaller subgroups within the cluster.
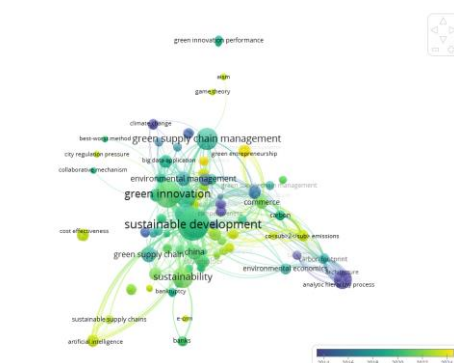


**Figure 7.** Selected Keyword

The presence of a single cluster with 21 links indicates a cohesive research network where most authors are interconnected rather than forming isolated groups. This suggests a well-integrated collaboration system where knowledge is shared efficiently among researchers. The dominance of certain authors further highlights their role as key figures driving research initiatives in the field. Understanding this network structure provides insights into existing academic partnerships, potential future collaborations, and the overall influence of each researcher within the domain. Additionally, this analysis can help identify gaps in collaboration, encouraging broader interdisciplinary partnerships to strengthen research output.
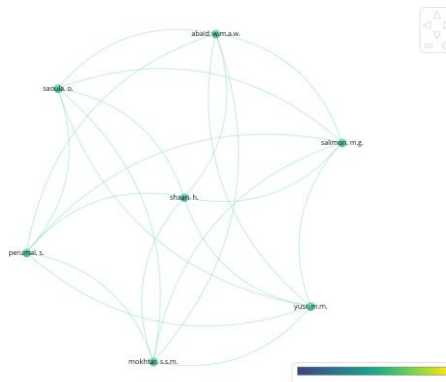


**Figure 8.** Result of Co-Authorship



**Figure 9.** Selected Authors



**Figure 6.** Result Co-Occurence Keyword

### 3.4. Relevance Journal Review

After gathering data such as authors, the most relevant documents, and the most cited documents, the researcher wants to conduct a gap analysis related to the relevant journals. The aim is to examine the connections and comparisons in terms of subject matter, methodological approaches, variables used, inter-variable relationships, and research outcomes. The selection of relevant journals is sourced from Scopus, based on the similarity of topics covered, and considering the most cited or popular articles for investigation. Table 1 presents the research gap based on the relevance of the obtained journals, identifying 10 relevant journals for analysis. The common topic used by all journals is GSCM, with the dominant research object being the manufacturing industry. The method used by all journals is PLS-SEM. SEM is a statistical analysis method that allows testing complex relationships that are often difficult to measure simultaneously. It is a multivariate approach that combines factor analysis and regression (correlation) to examine the connections among variables within a model, including the associations between indicators and constructs, as well as the relationships among various constructs (Hair et al. 2021). Table 1 shows the research gap by examining the author, subject, number of samples, method, variables, times cited, objectives, results, and publisher of each journal obtained.

### 3.5. In-Depth Interpretation of the Relationship Between GSCM and Green Innovation

The relationship between the implementation of GSCM practices and green innovation can be explained through two theoretical approaches, namely the evolutionary theory proposed by Nelson and Winter (1982) and the concept of value co-creation introduced by Prahalad and Ramaswamy (2004). Both approaches emphasize that collaboration among various parties within a company's supply chain plays a crucial role in driving environmental innovation, as a response to substantial external pressures, particularly from government regulations and regulatory authorities (Abu Seman et al. 2019) . Viewed from the process perspective, green innovation involves adjustments to manufacturing procedures that aim to lessen environmental damage during the stages of material sourcing, production, and distribution. Furthermore, the significance of managerial innovations in supporting the adoption of GSCM practices should not be underestimated (Chiou et al. 2011).

Various academic studies discuss the relationship between GSCM practices and green innovation (GI) across different countries and industries. Research in Malaysia and South Korea shows that implementing GSCM promotes GI, particularly in manufacturing and carbon-neutral companies (Wen et al. 2023). From the perspective of internal practices, senior management's commitment and cross-departmental collaboration strengthen a company's environmental management efforts and stimulate green innovation (GI). The GI process involves addressing environmental demands from stakeholders such as suppliers, customers, and the government. In reducing pollution, companies tend to opt for environmentally friendly materials, optimize production processes, and enhance product recycling (Li and Yan 2021). Therefore, both internal and external GSCM practices have the potential to drive green innovation.

### 3.6. Literature Review

A systematic literature review highlights several research gaps in the study of Green Supply Chain Management (GSCM) and Green Innovation (GI). As shown in Table 1, most prior studies focus on the manufacturing sector, particularly in China, Malaysia, and Taiwan (Chiou et al. 2011; Kong et al. 2020; Yusr et al. 2020). This indicates a lack of research in other industries, such as agriculture, mining, energy, and tourism, which also play a critical role in sustainability efforts. PLS-SEM was chosen in many of these literature studies because of its ability to analyze complex models. Le et al (2024) explains that this method is highly suitable for examining intricate relationships between variables. Similarly, (Wen et al. 2023) emphasizes that PLS-SEM allows for a more in-depth structural analysis, including higher-order constructs, mediation, and moderation effects. Additionally, PLS-SEM facilitates the exploration of causal relationships and model prediction, making it an effective tool for research focused on environmental management strategies. In this study, the application of PLS-SEM enables a more comprehensive evaluation of variable relationships, ensuring accurate and reliable analysis. Additionally, while studies predominantly employ PLS-SEM as the analytical method (Abu Seman et al., 2019; Wong et al., 2020; Muduli et al., 2020) (Abu Seman et al. 2019; Muduli et al. 2020; Wong, Wong, and Boon-itt 2020), variations in sample size, research focus, and geographical context create inconsistencies in findings. This suggests the need for further research to develop a more generalized framework that can be applied across diverse economic sectors and regions.

**Table 1.** Research Gap by Relevance Journal

| Author | No. Sample | Subject | Method | Variable | Study Objective | Results | Limitations | Publisher |
|---|---|---|---|---|---|---|---|---|
| (Chiou et al. 2011) | 124 | Businesses across eight industrial sectors in Taiwan | PLS-SEM | Greening the Supplier, Product Innovation, Managerial Innovation, Environmental Performance, and Competitive Advantage | Offering empirical proof to incentivize corporations to adopt green supply chain and green innovation practices, aiming to enhance their ecological performance and strengthen their competitive edge in the international market. | Enhancing suppliers' sustainability via green innovation yields substantial advantages for a corporation's environmental performance and competitive edge. | The low questionnaire response rate may affect the representation of all companies in Taiwan. Additionally, the sample covers various industrial sectors, not just one. There is a common method bias due to using a single source for the survey. Lastly, the questionnaire underwent no pilot testing prior to the full survey administration. | Elsevier Ltd |
| (Khaksar et al. 2016) | 103 | Cement companies in Fars Province | PLS-SEM | Green supplier, Competitive advantage, Environmental performance, Green Innovation | Assessing the correlation among a sustainable supplier, eco-friendly innovation, environmental effectiveness, and competitive edge within the cement sector, a pivotal industry in Iran. | The presence of green suppliers and innovations has a favorable effect on an organization's environmental performance and is associated with an competitive advantage. | The study did not consider buyer-related factors such as size of the organization, industry norms, market demands, and financial pressures all influence the green supply chain participants. | Taylor and Francis Ltd. |
| (Abu Seman et al. 2019) | 123 | Manufacturing organisations in Malaysia | PLS-SEM | Green Purchasing, Green Managerial Innovation, Green Marketing Innovation, Green Process Innovation, Reverse Logistic, Internal Environmental Management, Customer Environmental Cooperation, Green Product Innovation, Environmental Performance | Furnishing empirical data demonstrates the significant enhancement of improving environmental performance by implementing Green Supply Chain Management (GSCM) and green innovation practices, aiming to motivate organizations to integrate these practices. | The notable impact of GSCM in enhancing the green innovation of organizations and in manufacturing facilities can lead to environmental improvement. Similarly, the important role of green innovation in manufacturers can boost both their GSCM and overall environmental performance. | This study's use of only one Environmental Management Representative from each Malaysian manufacturing organization may lead to common method bias. Moreover, the small sample size and exploratory approach may restrict the conclusiveness and generalizability of the findings, which were solely based on organizational environmental performance to assess the adoption of GSCM and green innovation practices. | Elsevier Ltd |
| (Kong et al. 2020) | 237 | Chinese manufacturers | PLS-SEM | Green supplier integration, Knowledge exchange, Green internal integration, Green process innovation, Green innovation, Green customer integration, Knowledge combination | Examine an indirect relationship between Green Supply Chain Integration (GSCI) and green innovation, where knowledge exchange and combination serve as mediators. | GSCI indirectly impacts green innovation. Green internal integration affects innovation by knowledge exchange and combination, while GSI influences innovation solely through knowledge combination, and green customer integration impacts innovation only through knowledge exchange. This sheds light on the GSCI-green innovation relationship. | The study employs a cross-sectional design, limiting the testing of dynamic changes in the relationship between GSCI, knowledge creation, and green innovation. GSCI outcomes are seen as immediate and short-term, but the effects of knowledge creation may not be immediately visible. This study reflects the extent of the relationship between the hypothesized variables in China, cautioning against overgeneralization. | John Wiley and Sons Ltd |
| (Yusr et al. 2020) | 143 | Malaysian manufacturing companies | PLS-SEM | Innovation Capabilities, Green Innovation Performance, GSCM | The research introduces a model to improve understanding of achieving green innovation. It highlights GSCM as explanatory for green innovation performance and examines how | Firms can enhance their green innovation capability through collaborative partnerships across the supply chain, facilitated by cooperative green supply chain | This article solely focuses on manufacturing companies. The model presented examines various constructions related to green innovation performance. However, it | Elsevier Ltd |

| Author | No. Sample | Subject | Method | Variable | Study Objective | Results | Limitations | Publisher |
|---|---|---|---|---|---|---|---|---|
| | | | | | green innovation capabilities mediate to facilitate the importance the GSCM on the performance of green innovation. | management. This fosters knowledge acquisition in various green domains, including technology, market, suppliers, and regulations. | has not explored the moderating involvement of government regulations. | |
| (Lisi, Zhu, and Yuan 2020) | 249 | Chinese Firms | PLS-SEM | Green Supplier Learning, Green Turbulence, Green Customer Learning, Green Product Innovation, Green Process Innovation | Examines how two aspects of green supply chain learning affect two categories of green innovation, with green technology turbulence as a moderating factor. | Learning from supply chain partners is vital for sustainable development and improving firms' adaptability to external technological changes during the implementation of environmental practices. | Other factors impacting green innovation besides Green Innovation itself weren't systematically examined in this study, which solely focused on the moderating role of turbulence of green technology. Data collection occurred at a single point in time from a single respondent, and the mechanisms linking green supply chain learning to green innovation were not fully addressed. | John Wiley and Sons Ltd |
| (Yang et al. 2020) | 300 | China Organization | PLS-SEM | Green Information Systems, GI, Corporate Sustainability, Green Supply Chain Management, Informal Alignment | Explores the potential alignment between them in relation to their combined impact on corporate sustainability. | The cooperation between GSCM and GIS in corporate sustainability provides valuable insights for researchers and practitioners to enhance the effectiveness of GI. | This study only gathers observations from one country, China, which may not necessarily face the same challenges and conditions as other countries. | Springer |
| (Wong, Wong, and Boon-itt 2020) | 192 | Hongkong Manufacturing and retail firms | PLS-SEM | Green Process Innovation (GPEI), Green Internal Integration, Green Supplier Integration, Green Product Innovation (GPUI), Environmental Performance, Cost Reduction, Green Customer Integration | Examines whether the three facets of GSCI enhance environmental performance and cost reduction through the facilitation of GPEI and GPUI. | Green customer integration boosts both cost and environmental performance through the encouragement of green process innovation, facilitated by green internal integration. This differs from green product innovation and green supplier integration, which do not produce similar efficiencies. | The study depends on cross-sectional data, which restricts our capacity to establish causality. Additionally, the insufficient sample size prevents the inclusion of additional factors in the structural model. | Taylor and Francis |
| (Muduli et al. 2020) | 101 | Indian mining sector | PLS-SEM | Top Management Support (TM), Work Culture (WC), Green Innovation (GI), Resistance to Change (RC), Teamwork (TW), Green Motivation (GM) | Examine the behavioral elements influencing GSCM performance within the rapidly expanding mining sector of an emerging economy. | The study will provide valuable insights for mining companies, enabling them to pinpoint areas that demand attention to improve GCSM performance concerning behavioral factors. | The sample size in this research partially limits how its findings can be applied on a wider scale. Behavioral factors are still limited and can be further developed. | John Wiley and Sons |
| (Li and Yan 2021) | 146 | China's firms that's focuses on GSCM | PLS-SEM | Green Subsidy (GS), Sustainable Development Performance (SDP), GI, GSCM | A moderated mediation model is developed based on the theoretical framework of green innovation and signal transmission to explore this inherent mechanism. | GSCM positively impacts SDP to a significant degree. The mediation of green innovation and the moderation of green subsidies are both significant factors, even after conducting several tests for endogeneity and robustness. | This study focuses solely on the relationship between GSCM and SDP, incorporating green innovation and green subsidy. GSCM complexity is evaluated using the CITI index, concentrating on Chinese listed companies due to GSCM's significance in China. | MDPI |

Another significant research gap is the limited exploration of mediating and moderating factors influencing the relationship between GSCM and GI. While existing studies have investigated the impact of green supplier integration, internal integration, and customer integration (Lisi, Zhu, and Yuan 2020; Wong, Wong, and Boon-itt 2020), fewer have examined the roles of government policies, corporate environmental strategies, and financial incentives as moderators. Additionally, most research primarily measures environmental and competitive performance (Abu Seman et al. 2019; Khaksar et al. 2016; Li and Yan 2021), with limited attention to social and economic sustainability aspects. This gap suggests that future studies should integrate a holistic sustainability framework, incorporating economic incentives, policy interventions, and technological advancements to enhance the effectiveness of GSCM and GI. Furthermore, while studies have analyzed green product innovation, process innovation, and managerial innovation (Chiou et al. 2011; Yusr et al. 2020), the interaction between technological innovation and sustainability performance remains underexplored. Addressing these gaps will help achieve a deeper understanding of how GSCM and GI can drive long-term sustainable development.

## 4. CONCLUSION

This study systematically reviews the interrelationship between Green Supply Chain Management (GSCM) and Green Innovation (GI), identifying key research trends, gaps, and opportunities. The findings show that while GSCM has gained significant attention in developed countries, research in developing economies remains limited. The manufacturing sector dominates existing studies, with less focus on other key industries such as agriculture, mining, energy, and tourism. Theoretical contributions highlight how GSCM serves as a catalyst for environmental innovation, reinforcing the link between supply chain integration, stakeholder collaboration, and policy enforcement with improved sustainable performance. From a practical perspective, these findings emphasize the need for companies to adopt green supply chain practices and for policymakers to design stronger regulatory incentives that encourage sustainable business operations.

However, this study has several limitations. First, it relies on a bibliometric and systematic literature review, which may exclude some relevant studies from non-indexed sources. Second, most existing studies analyzed use PLS-SEM as the dominant method, potentially limiting methodological diversity. Third, key mediating and moderating factors, such as government policies, corporate environmental strategies, and financial incentives, remain underexplored.

Future research should address these gaps by conducting empirical studies in developing countries, broadening the sectoral focus beyond manufacturing,

and incorporating new analytical approaches such as machine learning to enhance predictive modeling. Additionally, integrating economic and social sustainability dimensions into GSCM and GI research will offer a more comprehensive perspective of their long-term impacts. Strengthening interdisciplinary collaboration will also be crucial in developing comprehensive frameworks that align with global sustainability goals.

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