



RESEARCH ARTICLE

Unveiling Green Supply Chain Practices in Malaysia: A Comprehensive Review

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ARTICLE INFO	ABSTRACT
Received: May 22, 2024 Accepted: Jul 22, 2024	The implementation of Green Supply Chain Management (GSCM) has gained substantial focus worldwide given its importance in achieving environmental sustainability and enhanced business performance. As a rapidly developing nation, Malaysia faces growing demands to simultaneously reduce carbon emissions while fostering economic growth. This systematic review investigates the current state of GSCM implementation in Malaysia to shed light on its practices, challenges, and opportunities. It adopts the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) approach to systematically identify and analyze primary data sources related to GSCM in Malaysia. A comprehensive search strategy was devised, focusing on keywords such as “green supply chain” and “Malaysia.” Based on primary data, the researchers have identified three prominent themes in the context of GSCM implementation in Malaysia, which are (i) the current state of GSCM adoption, (ii) environmental sustainability and organizational performance, and (iii) innovation and integration strategies. In summary, this review highlights the significance of adopting eco-friendly supply chain practices for environmental and economic sustainability in Malaysia, emphasizing the importance of GSCM adoption for businesses. The findings contribute to future research and policymaking toward a greener and more sustainable Malaysia.
Keywords Green Supply Chain Sustainability Practices Malaysia PRISMA	
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INTRODUCTION

Green Supply Chain Management (GSCM) has garnered substantial focus in recent years, fueled by increasing awareness of environmental concerns and the need for businesses to incorporate more sustainable practices (Choudhary & Sangwan 2022; Feng et al. 2022; Le 2020; Nureen et al. 2022; Vanalle et al. 2017). As a developing country with a rapidly growing industrial sector, Malaysia faces unique challenges in implementing Green Supply Chain Management Practices (GSCMP). This article aims to provide a systematic review of the implementation of GSCM in Malaysia, examining the current state of GSCMP, identifying the barriers and drivers of implementation, and exploring the potential benefits and outcomes. Furthermore, the implementation of GSCMP is crucial for Malaysia's sustainability goals and the long-term success of its industries. As a country that heavily relies on natural resources and has a high carbon footprint, Malaysia needs to adopt sustainable practices to mitigate the impact to the environment from its industrial processes.

Green supply chain is described as an integration of environmentally sustainable practices into the entire supply chain management processes. It involves adopting sustainable initiatives in procurement, production, transportation, and distribution of products and services. The goals of GSCM are to reduce the adverse environmental effects resulting from supply chain activities while maximizing its overall efficiency and profitability (Emmanuel et al. 2022; Gupta 2022; Verma et al. 2018). In a green supply chain, companies strive to eliminate waste, conserve energy and natural resources, and minimize pollution throughout the entire supply chain. Various initiatives can be implemented to achieve this such as using eco-friendly materials, implementing energy-efficient technologies, recycling or reusing materials and products, and optimizing distribution routes to reduce fuel consumption. Additionally, collaboration between the company with their suppliers and customers will help to ensure that sustainable practices and principles are implemented throughout the supply chain (Laari et al. 2017; Sonar et al. 2022).

The implementation of GSCMP offers numerous benefits to companies and the environment. From a business perspective, it can result to cost savings by reducing energy and resource consumption, improved operational efficiency, and enhanced brand reputation (Al-Sheyadi et al. 2019). It also helps to comply with environmental regulations and meet the growing demand for eco-friendly products and services. However, implementing a green supply chain can be challenging and requires a systematic approach (Fetter & Zilahy 2022; Tseng et al. 2019). It involves assessing the environmental impact of each supply chain activity, identifying areas for improvement, and developing strategies to mitigate the negative effects. Furthermore, companies need to establish clear sustainability goals, measure and monitor their performance, and engage in continuous improvement efforts to ensure the effectiveness of their green supply chain initiatives.

This review will provide an overview of the existing literature on GSCM implementation in Malaysia, including studies that have examined various aspects of GSCMP. This includes green procurement, green manufacturing, green logistics, and reverse logistics. By synthesizing the findings of these studies, we aim to identify the key challenges and opportunities for GSCM implementation in Malaysia. Furthermore, this review will explore the drivers and barriers that influence adopting GSCMP in the Malaysian context. Moreover, by addressing the barriers and leveraging the drivers, Malaysia can create an enabling environment for businesses to adopt and implement GSCMP. Finally, this review will highlight the potential benefits and outcomes of implementing GSCM in Malaysia. Hence, businesses can be motivated to integrate GSCMP into their supply chain operations by understanding the potential benefits.

Overall, this systematic review has the objectives to provide an extensive understanding of GSCM implementation in Malaysia. By synthesizing existing literature and drawing insights from empirical studies, valuable perspectives that are beneficial to both academic researchers and industry practitioners can be provided. The outcome of the findings will contribute to a deeper understanding of the challenges and opportunities in integrating sustainability into supply chain management practices in Malaysia, thereby facilitating informed decision-making and policy development in pursuit of a greener and more sustainable future for the nation.

LITERATURE REVIEW

Yusuf et al. (2022) emphasized that GSCM has, at least recently, attracted more attention. It has now become clear that the administration of it involves considerable complexity. There

is a need to reduce and comprehend this complexity from a practical and scientific standpoint. The finding is consistent with findings of past studies by Jaaffar and Kaman (2020) described Malaysia as being compelled to curtail the usage of energy and the release of carbon emissions. Companies, particularly those generating substantial volumes of hazardous waste, must prioritize the proper treatment, storage, transportation, and disposal of these waste materials to mitigate their adverse environmental impact.

Research findings by Suryanto et al. (2018) also highlight the dynamic nature of the business landscape, emphasizing that organizations must continually adapt both internally and externally to remain competitive globally. Supply chain management emerges as a crucial driver for firms seeking to attain superior performance in this ever-evolving and competitive environment. Lin et al. (2020) suggested that several factors play a great impact on shaping the adoption of GSCM for the Small and Medium-sized Enterprises (SMEs) in Malaysia. These factors include its relative benefits, cost, management support, size of the organization, external pressures such as customer and regulatory, as well as capability of the human resources.

Numerous viewpoints from previous studies assert that environmental pollution in Malaysia arises from the inadequacy of GSCM among SMEs. Since then, GSCM has been introduced as a catalyst for enhancing sustainable performance and achieving environmental preservation objectives across the supply chain. Rozar et al. (2019) has also discovered that in many manufacturing SMEs in Malaysia, social factor is the most crucial parameter for improving GSCM practices, followed by the operations, environment and the business economy. In a different study, Rezali et al. (2021) emphasized a growing urgency for sustainable performance within the healthcare supply chain. The healthcare sector is currently facing a multitude of conflicting demands in addition to the novel challenges associated with achieving sustainable performance.

Giannakis and Louis (2011) observed that services have gained immense significance in recent decades in global economies. Service-oriented companies have consistently catalyzed economic growth in every advanced nation. Regrettably, researchers often underestimate the significance of conducting research in the field of service supply chain management (Habib 2010). Sustainable practices, which produce mutually advantageous results for the environment, society, and businesses, hinge on leaders proactively fostering a "culture of sustainability" within their organizations. Consequently, the active involvement of leadership in implementing sustainability is indispensable for any progressive organization (Basu et al. 2016).

MATERIAL AND METHODS

Identification

The systematic review process involves three primary stages in selecting a suitable articles. Relevant keywords and terms are identified in the initial stage by using resources such as thesaurus, encyclopedias, and prior studies. After establishing all relevant keywords, search strings were developed for the primary database which are Scopus and Web of Science (WoS) (refer to Table 1). A combined total of 137 papers were successfully obtained from both databases for the initial phase of this systematic review.

Table 1: Search strings utilized in the wos and scopus databases

Scopus	TITLE-ABS-KEY (("green supply chain" OR gscm) AND malaysia) AND PUBYEAR > 2014 AND PUBYEAR < 2025 AND (LIMIT-TO (SRCTYPE , "j")) AND (LIMIT-TO (AFFILCOUNTRY , "Malaysia")) AND (LIMIT-TO (PUBSTAGE , "final")) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (LANGUAGE , "English")) Access Date: 15 th June 2024
WoS	Topic = ("green supply chain" OR gscm) AND malaysia Refined by: DOCUMENT TYPES: (ARTICLE), COUNTRIES/REGIONS: (MALAYSIA) AND PUBLICATION YEAR: 2015-2024 Access Date: 15 th June 2024

Screening

In the initial phase, 62 articles were screened employing a set of criteria for inclusion and exclusion established by the researchers (see Table 2). The primary criterion for inclusion was that the content should be in the form of research articles, as they provide practical information and insights. Publications that were excluded in this study are systematic reviews, conference proceedings, meta-analyses and books. Additionally, articles published in English are exclusively focused. Since the study concentrated on the latest academic research on the subject, the timeframe chosen covered an eight-year period (2016–2023). Furthermore, the analysis objective dictated the focused country of this study is Malaysia as an important screening criterias. Based on these specific parameters, 87 publications have been excluded. The second phase of the screening, aimed at eliminating duplicate papers, resulted in the removal of 12 articles.

Table 2: The criteria used for conducting searches

Criteria	Inclusion	Exclusion
Language	English	Non-English
Year of publication	2015 – 2024	< 2015
Source type	Journal (only research articles)	Review, conference paper, book
Document type	Article	Review, conference, note
Country	Malaysia	Besides Malaysia

Eligibility

50 articles were selected in the third step which is the eligibility phase. In this phase, the articles’ titles and critical information were extensively reviewed to assure they fulfill the inclusion criteria that align with the study’s objectives. As a result, 27 reports have been excluded as they fell outside the scope of the study, had unrelated titles, or presented abstracts that were

irrelevant to the study’s empirical evidence objectives. Ultimately, 23 articles remained for review.

Data abstraction and analysis

An integrative analysis approach is utilized in this study which require multiple research designs for instance qualitative, quantitative as well as mixed methods. The focus of the research revolves around formulating suitable topics. The initial phase involved data collection, where the authors thoroughly examined 23 papers for statements and information pertinent to the research questions. Throughout this research, the main author and co-authors are collaborated to develop themes derived from the findings, maintaining a log to record analysis, insights, questions, or other relevant aspects of data interpretation. Any discrepancies in theme creation were resolved through discussion and comparison of findings among the authors. Finally, the established themes were refined to assure their coherence. Consequently, in order to validate the credibility of the findings, two industry experts specializing in green supply chain and operation management conducted examinations to establish domain validity for each sub-theme. Adjustments were made at the author's discretion, incorporating feedback and comments from the experts.

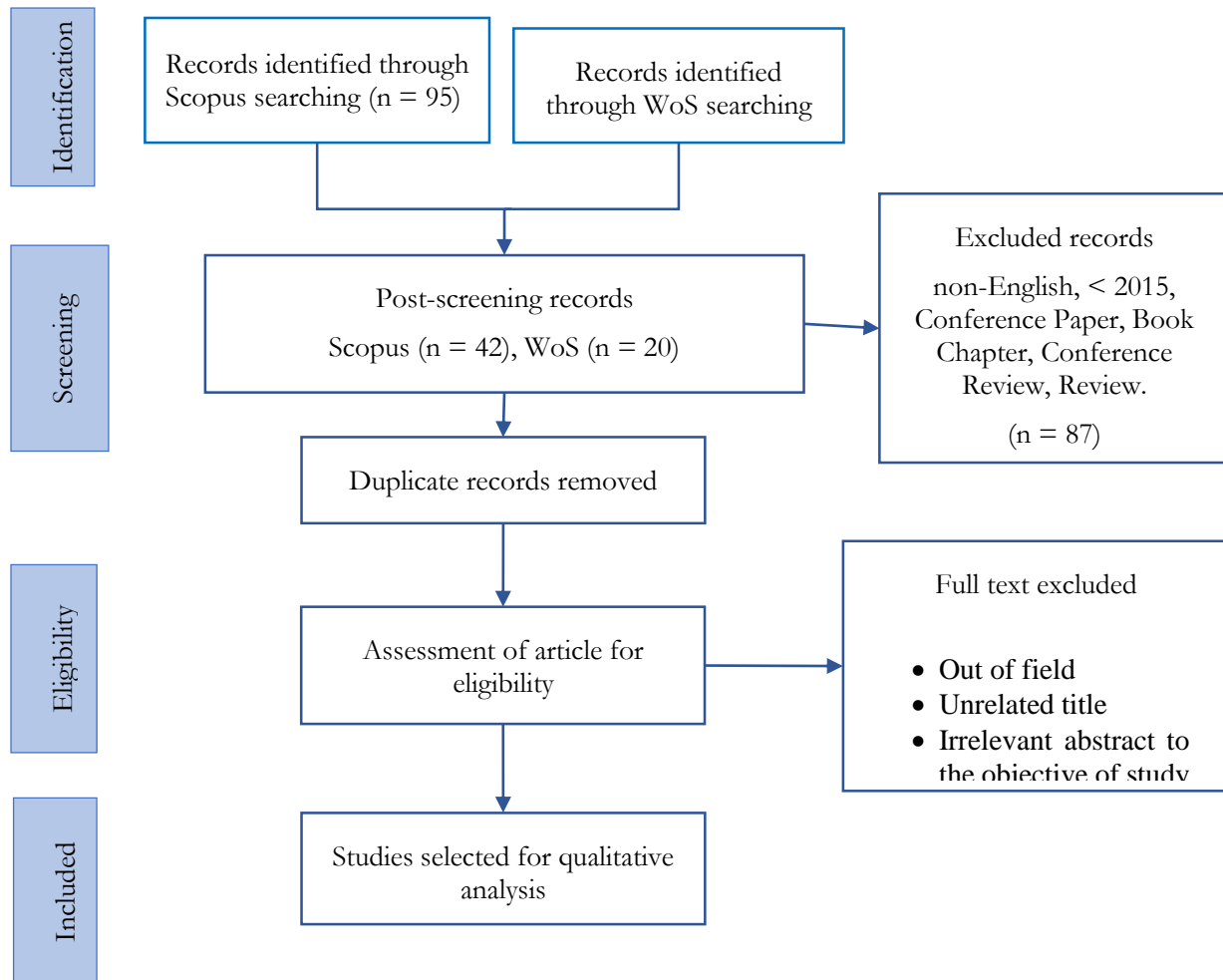


Figure 1: Flow diagram of the proposed search study (Page et al., 2021)

RESULT AND FINDING

Expert research played a central role in formulating pertinent themes for subsequent discussion. In the context of GSCM in Malaysia, our systematic review has identified three pivotal themes, which are (i) the current state of GSCM adoption, (ii) its impact on environmental sustainability and organizational performance, and (iii) innovative strategies employed in its implementation. These themes provide an insightful portrayal of the prevailing landscape, shedding light on the complexities and opportunities surrounding sustainable supply chain practices in Malaysia.

Table 3: The Findings of the research article derived from the identified search criteria

Theme 1: Current State of GSCM Adoption

Authors	Title	Year	Method	Results and Findings
Lin C.-Y.; Al-Shaikh M.E.; Ho Y.H.; Sultan P.; Alam S.S (Lin et al., 2020b)	“Adoption of green supply chain management among SMEs in Malaysia”	2020	Data were gathered from a questionnaire survey of SMEs in the Klang Valley, Selangor, Malaysia. Regression analysis was utilized to investigate the hypothesized connections between organizational, technological and environmental elements and the SMEs’ tendency in embracing GSCMP.	The study outcomes indicate that several factors such as benefits, cost, complexity, compatibility, organization size, external pressures, and the competency of employees, and management support, contribute to the impact on the implementation of GSCM in Malaysia’s SMEs.
Shamsuddin A.; Ahmad W.N.K.W.; Peng L.C.(Shamsuddin, Ahmad, et al., 2020)	“Green supply chain management practice and performance of manufacturing companies in Batu Pahat, Johor”	2020	This research examines the correlation of GSCMP and sustainability performance in manufacturing companies located at Batu Pahat, Johor. The study employs surveys as well as a comparative analysis of two case companies, involving the collection of interview data.	The results indicate that manufacturing firms in Batu Pahat demonstrated a average level of GSCMP and sustainability performance. Companies should emphasize a focus on managing environmental aspects, giving due consideration to reverse logistics.
Jasmi M.F.A.; Fernando Y; Ismail I.(Jasmi et al., 2020)	“Adoption level of maritime green supply chain management: Preliminary	2020	The study examined the perceptions of maritime firms in Malaysia regarding the adoption of Maritime GSCM and its impact to the financial	The findings indicated a positive relationship between the overall value of MGSCM practices and financial efficiency of the maritime supply chain.

	findings from a pilot study”		performance. Statistical analyses were conducted, including an assessment of scale reliability through internal consistency testing.	
Shamsuddin A.; Wahab E.; Wan Ahmad W.N.K.; Abdullah N.H.; Hamid M.S.A.(Shamsuddin, Wahab, et al., 2020)	“Green supply chain management (GSCM): A research agenda”	2020	This conceptual paper explores the global context of GSCM and examines potential avenues for future GSCM research in Malaysia. The primary drivers behind GSCM adoption are regulatory pressures, customer demands, and increased public awareness.	The results indicate that the adoption of GSCM can bring a positive impact to the economic performance and environmental preservation of the organization.
Jaaffar A.H.; Kaman Z.K. (Jaaffar & Kaman, 2020)	“Green supply chain management practices and environmental performance: a study of employee’s practices in Malaysia chemical related industry”	2020	This study examines the perspectives of employees in the Malaysian chemical-related industry regarding their company’s GSCMP and environmental performance. To achieve this, an empirical study was conducted, aligning with the provided theoretical framework.	The results indicate that a significant number of employees believe that by complying to the regulations and legislation, their company can improve the environmental performance rather than actively developing the practices towards green supply management.
Afroz R.; Muhibbullah M.; Morshed N.; Rahman A. (Afroz et al., 2019)	“Malaysian automobile industry and green supply chain management”	2019	The study determines the primary obstacles within the automotive sector in Malaysia. Data were gathered through research conducted on companies operating within automotive supply chain industry in country.	The results highlight the foremost barrier in this focused industry is “market competition and uncertainty,” followed by the challenge of “lack of implementing green practices.”
Fernando Y.; Shaharudin M.S.; Jasmi M.F.A. (Fernando et al., 2019)	“Maritime green supply chain management: Its light and shadow on the	2019	This paper aims to explore how Maritime GSCM impacts sustainable business performance. Online	The results affirmed that multiple areas are improved from the adoption of Maritime GSCMP such as

	bottom line dimensions of sustainable business performance”		survey was organized among diverse companies operating related to maritime supply chain in Malaysia.	operational and environment performance, as well as social and economic benefits.
Sundram V.P.K.; Bahrin A.S.; Othman A.A.; Munir Z.A. (Sundram et al., 2017)	“Green supply chain management practices in Malaysia manufacturing industry”	2017	The study investigate the correlation between GSCMP and the environmental as well as operational performances of manufacturing firms in Malaysia. The research methodology utilized a quantitative approach, employing survey questionnaires developed through an extensive review of pertinent literature on green practices.	This study identified the significant practices of GSCM in Malaysian manufacturing industry. From the industrial practices examined, only investment recovery and eco-design and packaging practices were identified to affect environmental performance positively.
Khairani N.S.; Kasim E.S.; Rajamanoharan I.D.; Misman F.N.(Khairani et al., 2017)	“Green supply chain management in the Malaysian automotive industry: A systems thinking perspective”	2017	In this study focusing on the Malaysian automotive industry, the deployment of GSCM is thoroughly examined. The semi-structured interviews and document reviews were used for the qualitative research methods to gather data from a specific automotive manufacturing company in Malaysia.	The results from this study indicate that the case firm adopts a comprehensive and systematic approach when implementing GSCMP. This holistic approach to Implementation of GSCM involves a well-structured and regulated procedures that actively promotes systematic green practices.

Theme 2: Environmental sustainability and organizational performance

Authors	Title	Year	Method	Results and Findings
Roespinoedji D.; Kurniawan R.; Nugraha U.; Jabarullah N.H. (Roespinoedji et al., 2019)	“The role of institutional pressures in driving internal and external green supply	2019	The researchers utilized Exploratory Factor Analysis (EFA) to uncover the underlying factors contributing to the comprehensive	The structural equation modeling results confirm that internal and external green supply chain practices are significantly and positively influenced by institutional pressure.

	chain practices and environmental performance”		approach. This approach helps the manufacturing firms identify the influence of institutional pressures for successful adoption of GSCM in Malaysia.	
Tan C.L.; Zailani S.H.M.; Tan S.C.; Shaharudin M.R. (Tan et al., 2016)	“The impact of green supply chain management practices on firm competitiveness”	2016	Through a study involving 144 Malaysian manufacturing firms, evidence was found to support the idea that a relationship exists between GSCMP and firm competitiveness.	The findings of the study conducted demonstrates that firm competitiveness is impacted by green production and green purchasing.
Rezali N.; Ali M.H.; Idris F.(Rezali et al., 2018)	“Empowering green healthcare supply chain management practices challenges and future research”	2018	This study investigated the internal challenges faced by the supply chain management in adopting sustainable green practices and their influence towards the sustainability of private healthcare in Malaysia.	The empirical results provide healthcare supply chain professionals valuable insights into strategies for achieving and maintaining competitive advantages within healthcare sector.
Mubarik M.; Raja Mohd Rasi R.Z.; Mubarak M.F.; Ashraf R. (Mubarik et al., 2021)	“Impact of blockchain technology on green supply chain practices: evidence from emerging economy”	2021	Influence of the blockchain technology towards the GSCMP is explored in this study, aiming to enhance environmentally sustainable conditions within manufacturing supply chains. Questionnaire were developed from the relevant literature to assess the potential benefits.	The outcomes affirm the influence of blockchain technology on GSCMP. Technological orientation is considered as a moderating factor that enhances the connection between blockchain technology and GSCM practices.
Fernando Y.; Walters T.; Ismail M.N.; Seo Y.W.; Kaimasu M. (Fernando et al., 2018)	“Managing project success using project risk and green supply chain management: A survey of	2018	This study investigate potential positive relationship between Project Risk Management (PRM) and GSCM and their positive results on the project success.	The findings evidenced a positive relationship between PRM and GSCM with project management performance and project success. This implies that skillfully implementing GSCMP and strategies for

	automotive industry”		Data was gathered from project managers within the automotive industry and subjected to analysis through structural equation modeling.	managing risks can serve as valuable strategic approaches to improve sustainable project performance and the successful execution of projects.
Rozar N.M.; Zakaria M.N.; Razik M.A. (Rozar et al., 2019b)	“Sustainability performance approach in Malaysia’s SMEs for Improving Green Supply Chain Management (GSCM); An Application of Quality Function Deployment (QFD)”	2019	This study aims to determine critical performance factors for measuring GSCM in SMEs. Through quantitative data analysis, two significant factors that impact performance have been identified which are GSCM Benefits and Critical Success Factors.	The model indicated that the social factor emerges as the most critical parameter for driving improvements in GSCM, followed by economic, operational, and environmental factors.
Jing K.T.; Ismail R.B.; Yee H.C.; Shafiei M.W.M.; Wai T.K.(Jing et al., 2019)	“The practices of green supply chain management towards corporate performances in the construction industry”	2019	This study explores a correlation between GSCMP and corporate performance within the Malaysian construction industry. It applied a systematic literature review methodology to gather and analyze data, focusing on identifying the connections between GSCMP and corporate performance based on existing literature.	The results indicate a strong correlation between green practices and corporate performance within the Malaysian construction industry. Additionally, the study has developed a comprehensive conceptual framework that effectively illustrates the intricate relationships between GSCMP and corporate performance in this industry.
Tan C.L.; Low, C.H.; Yeo S.F. (Tan et al., 2018)	“Green supply chain management practices and organizational performance: An empirical study in Malaysian	2018	This research identifies the importance of GSCMP and the capabilities in manufacturing activities towards the organizational performance. The research employs a quantitative	The findings suggest that combining GSCMP and manufacturing capabilities is crucial in enhancing organizational performance among manufacturing firms.

	manufacturing firms”		approach and collects data from samples of large manufacturing firms in Malaysia.	
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Theme 3: Innovation and integration strategies

Authors	Title	Year	Method	Results and Findings
Jamal N.M.; Kiet W.W.; Saat M.M.; Othman A. (Jamal et al., 2020)	“A relationship analysis between green supply chain practices, environmental management accounting and performance”	2020	The aims of this study is to establish a structural framework to investigate the correlation of GSCMP and environmental management accounting. Data was gathered from questionnaire survey from environmental professionals, who were the intended respondents from ISO 14001-certified organizations in Malaysia.	The findings unveiled a significant relationship between GSCMP and environmental management accounting. This translates into enhanced economic performance, as improvements in environmental performance are realized.
Suryanto T.; Haseeb M.; Hartani N.H. (Suryanto et al., 2018)	“The correlates of developing green supply chain management practices: Firms level analysis in Malaysia”	2018	This study identified a positive and important relationship between GSCMP, organizational learning mechanisms, and firm support. These findings were obtained while controlling for variables such as organization size, country regulations, cost pressures, and industry practices at various levels.	The findings suggest that in today’s dynamic business environment, organizations must continually adapt both internally and externally to remain competitive globally. Managing supply chain is crucial in helping firms achieve superior performance.
Sundram V.P.K.; Rajagopal P.; Bahrin A.S.; Subramaniam G. (Sundram et al., 2018)	“The role of supply chain integration on green practices and performance in a supply chain context: A conceptual	2018	This paper aims to explore the existing research on the correlation between GSCMP, integration of supply chain, and manufacturing firm performance in Malaysia. It provides	The findings indicate that in an era of globalized economy and the imperative for sustainable development, Malaysian manufacturers should redirect their focus towards the entire supply chain, rather than

	approach to future research”		a comprehensive analysis and detailed explanation of each dimension and their interrelationships based on previous literature.	pursuing incremental improvements in individual plants..
Yusr M.M.; Mokhtar S.S.M.; Salimon M.G.; Abaid W.M.A.W.; Shaari H.; Saoula O.; Perumal S. (Yusr et al., 2020)	“Green innovation performance! How to be achieved? A study applied on Malaysian manufacturing sector”	2020	The study aims to examine the capabilities of green innovation to facilitate GSCM to impact the green innovation performance. The survey was conducted among 143 Malaysian manufacturing companies.	The framework explained in this research places a central focus on the enhancement of green innovation performance and the importance of GSCM in achieving this outcome. Additionally, this research delves deeper into exploring and elucidating the mechanisms through which GSCM exerts its influence on green innovation performance.
Abdullah R.; Mohamad M.N.; Thurasamy R.(Abdullah et al., 2017)	“Supply chain integration: Level of existence in green supply chain management practices among Malaysian ISO 14001 manufacturing firms”	2017	This paper assesses the degree of supply chain integration exists, encompassing internal, supplier and customer in Malaysia. Empirical investigation was conducted within companies that have adopted GSCMP and have obtained ISO 14001 certification.	The findings indicated that manufacturing firms in the country have adopted a substantial degree of supply chain integration. Among the three types of integration, internal integration was the most commonly implemented.
Abdullah R.; Mat Daud M.S.; Ahmad F.; Shukti A.A.; Shah M.Z.(Abdullah et al., 2016)	“Green logistics adoption among 3PL companies”	2016	The research aims to explore the extent to which Third Party Logistics (3PL) firms in Malaysia are implementing initiatives to support Green Logistics when providing services to their customers. This study focuses on three key areas of green logistics implementation which are operations, amenities and customers.	The findings suggest that in Malaysia, Green Logistics practices have already been implemented by some 3PL companies. The Malaysian government has played a role in raising awareness of green practices through nationwide initiatives promoting better waste disposal, green manufacturing, green building, and green products.

DISCUSSION

From the 9 selected articles that have been analysed, the first theme centered around the existing condition of GSCM implementation in Malaysia, sheds light on the prevailing situation within businesses. The consistent findings across the selected articles indicate that there exists a medium level of GSCM implementation within these companies. What this implies is that companies operating in Malaysia acknowledged the importance and significance of adopting environmentally friendly practices into the supply chains. They recognize the value of sustainability and environmental considerations in today's business landscape. This awareness is indeed a positive step, signifying a growing commitment to responsible and sustainable business practices. However, the challenge lies in translating this awareness into concrete actions throughout the supply chain. While the relevance of sustainability is acknowledged, the actual implementation of green practices across various key processes within the supply chain appears to be at a medium level. This suggests that there may be obstacles or limitations that hinder companies from fully embracing and integrating GSCM practices into their day-to-day operations. These barriers could include various factors such as resource constraints, operational complexities, or a lack of comprehensive understanding of how to effectively integrate GSCM into existing supply chain processes. Addressing these barriers and finding innovative solutions to integrate GSCM more effectively into operations will be crucial for further advancing sustainability efforts in Malaysian businesses.

The second theme delves into the correlation between environmental sustainability and organizational performance within the scope of GSCMP among Malaysian companies. 8 relevant articles that have been analyzed consistently reveals a moderate level of GSCMP implementation in these organizations. This indicate that while these companies in Malaysia have taken noteworthy steps towards integrating green practices into their supply chains, there is still room for improvement. The moderate level of GSCMP implementation signifies a balanced approach, reflecting progress without reaching full maturity in terms of sustainability practices. Importantly, the findings underscore a substantial connection between implementing GSCMP and achieving sustainability goals within these companies. This correlation implies that as businesses in Malaysia adopt and further integrate green practices into their supply chain processes, they are also making significant strides towards enhancing their environmental sustainability performance. However, the existence of a moderate level of GSCMP implementation suggests that there are specific areas within GSCMP where these companies can concentrate their efforts to achieve even higher levels of environmental sustainability and, consequently, organizational performance. Identifying and addressing these areas may involve strategies such as maximizing resource efficiency, minimizing waste, or improving supply chain visibility.

The third theme explores the crucial intersection of innovation and integration within the context of GSCM in Malaysia, drawing insights from the analysis of 6 articles. First and foremost, the research model applied in Malaysia underscores the significant role of GSCM in explaining green innovation performance. This suggests that companies in Malaysia are increasingly acknowledging the necessity of incorporating green practices into their supply chain management strategies. This integration is essential not only to enhance environmental sustainability but also to drive innovation that aligns with environmental sustainability goals. In essence, businesses are acknowledging that sustainable innovation is becoming a competitive advantage in the Malaysian business landscape, underlining the growing emphasis on environmental responsibility. Moreover, the studies within this theme delve into the mediating factors on the capabilities of green innovation in the GSCM context.

They suggest that these capabilities act as facilitators, enabling GSCM to positively impact green innovation performance. This implies that in Malaysia, promoting innovation with a strong environmental focus depends on the efficient integration of GSCMP. In other words, the ability to innovate in ways that contribute to sustainability goals is enhanced when GSCM practices are well-established and effectively integrated into supply chain processes.

While acknowledging the increasing awareness of GSCM's importance, it becomes apparent that this awareness has not translated into comprehensive insights or a deep understanding of the state of GSCM adoption in Malaysia. Specifically, the the absence of a comprehensive understanding of three key aspects. Firstly, there is limited knowledge on the existing GSCM implementation in Malaysia. This includes the extent to which GSCM practices are integrated into supply chain processes, the sectors where GSCM is most prevalent, and the overall adoption rate among businesses in the country. Secondly, the factors driving or hindering GSCM implementation in Malaysia are not thoroughly explored in existing studies. Understanding what motivates businesses to embrace GSCM practices and the challenges they face in doing so is essential for effective adoption. Thirdly, the unique practices, challenges, and opportunities related to GSCM within the Malaysian context remain insufficiently addressed. Given Malaysia's distinct economic, environmental, and social characteristics, it is crucial to explore how GSCM aligns with local conditions and what specific benefits or challenges it presents.

CONCLUSION

The findings of this systematic review suggest that research into the implementation of GSCM remains a significantly under-explored research area. Furthermore, there is a need to revisit the assessment of local landscape of GSCM in Malaysia as businesses aim to align with global sustainability trends. It underscores the necessity for businesses to adapt and adopt GSCM practices that are not only environmentally friendly but also economically viable within the Malaysian setting. Efforts should also be directed towards conducting studies that prioritize on the specific challenges, opportunities, and barriers unique to the Malaysian context. Despite the limited research, the implementation GSCM in Malaysia appears to offer substantial advantages such as aligning the businesses with the global sustainability trends, improving the operational efficiency, and enhancing competitiveness which will ultimately contributing to the economic and environmental well-being of the nation. Further studies should delve into the barriers to GSCM adoption and the precise areas where companies can make strides in their sustainability efforts. This comprehensive understanding will be crucial in advancing GSCM practices and fostering a more sustainable future for Malaysian businesses.

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