



Benchmark For Sustainability Supply Chain Management: Systematic Literature Review

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ABSTRACT: The purpose of this research is to find out how the implementation of benchmarking on the sustainability of supply chain management (SCM) and the benefits and impact of benchmarking in improving efficiency (SCM). The research method uses Systematic literature review by collecting 100 articles and the final result is 25 articles that are relevant to the objectives of this study. The results of the study are Benchmark Implementation in the sustainability of Supply Chain Management (SCM) can be by measuring the efficiency of the decision-making unit (DMU) with the Data Envelopment Analysis (DEA) method and as for the obstacles encountered in the implementation of Benchmark SCM, namely technological barriers and the application of GSCM can provide benefits of collaboration with customers, environmentally friendly design, and green marketing can encourage innovation.

KEYWORDS: Benchmarking, Sustainability, Supply Chain Management, and Green Supply Chain Management

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I. INTRODUCTION

Nowadays, concern for environmental issues is increasing. Therefore, companies and manufacturers are under the pressure of government rules and regulations on the one hand, and on the other hand, maintaining customer satisfaction related to environmental concerns. Green supply chain management (GSCM) is a procedure to increase efficiency and reduce environmental impact for companies in collaboration with customers and suppliers. According to GSCM, there are several studies on the application of Green aspects in purchasing, design, manufacturing, distribution, packaging, marketing, and reverse logistics of supply chain management to improve their company's performance regarding environmental issues. (Zaare Tajabadi & Daneshvar, 2023)

Aspects of environmental management, eco-design, and resource recycling are the most important GSCM themes. In addition, the top five practices are top management support, conducting life cycle assessments, managing environmental risks, advancing recycling technologies, and integrating reverse logistics (Gao et al., 2021). Managing the sustainability of a company's purchasing and being aware of the sustainability actions and practices of direct suppliers should be a basic level management action of every company today. However, sustainability and transparency requirements are becoming increasingly demanding. (Kähkönen et al., 2023)

Some academics believe that adopting SCM practices may not be financially beneficial. It has been suggested that the goal of sustainability is to generate long-term economic gains rather than short-term profits, making the adoption of a sustainable supply chain strategy essential. Furthermore, supply chain management (SCM) has conceptually evolved over the past 25 years to include each participating organization as a member of an integrated system with the goal of customer satisfaction. (Gera et al., 2022)

The application of green principles to determine efficient principles to improve management performance is very important. With the increasing concern for the environment in recent decades, environmental pollution must be considered in processes other than industrial development. The environmental and economic benefits of product remanufacturing, as well as consumers' environmental awareness, have encouraged many manufacturing and retail companies to produce and sell environmentally friendly products. All solutions to these issues must be combined and addressed within the framework of a comprehensive supply

chain procedure. Supply chain management (SCM) is an important factor that is directly related to a company's efficiency and competitive position. (Zaare Tajabadi & Daneshvar, 2023)

A powerful management tool to identify the best level of organizational performance as the standard in the industry and help the organization to improve continuously is benchmarking. Every inefficient organization wants to determine the best benchmark for benchmarking. Organizations that do benchmarking, intend to improve their weaknesses. To determine the benchmark, many experts have studied SCM evaluation. (Birasnav et al., 2022)

This study begins by explaining the SLR methodology and aspects relevant to the 2 stages of SLR, namely planning objectives and conducting a review. The review of this study analyzes and reviews benchmarking for supply chain management sustainability.

II. LITERATURE REVIEW

1. Supply Chain Management

In the 1990s, as production capacity increased, industry managers found that raw materials received from different suppliers played a significant role in improving the organization's ability to meet customer needs. It also significantly affected the organization's concentration, supply base, and sourcing strategy. In addition, managers found that simply making quality products is not enough, and in fact, supplying products with the criteria considered by customers (when, where, and how) and the quality and cost they desire poses new challenges. Under such conditions, as a conclusion to the changes mentioned above, they found that it would not be enough for them to manage the network, they would have to engage with customers in managing the network of all the factories and companies that supply their organization's inputs directly or indirectly and also the network of companies involved in delivery and after sales service. With such an attitude, the "supply chain" and "supply chain management" approaches emerged. (Zaare Tajabadi & Daneshvar, 2023)

chain management is the integrity of key business processes from end users through original suppliers that provide products, services, and information that add value to customers and other stakeholders (Ali, 2008). Although the main objective of supply chains is to reduce costs and increase revenue, there are many other important objectives. This, given the interconnectedness of economic aspects, ecology, and social crises, it is important to have a sustainable supply chain. (Alamelu et al., 2023)

2. Green Supply Chain Management

GSCM was introduced by the Michigan State University Industrial Research Association in 1996. GSCM is a new idea and an important new creative SCM strategy for businesses to achieve financial and environmental benefits simultaneously to minimize adverse impacts and hazards on the environment (Rosyidah et al., 2022). From a product life cycle perspective, GSCM covers all stages of raw materials, and product recycling. By using GSCM and technology, companies can reduce negative impacts on the environment and achieve optimal use of resources and energy (Zaare Tajabadi & Daneshvar, 2023). Practicing GSCM aims to help companies meet government requirements, reduce environmental risks and negative impacts along the supply chain, and improve the company's social reputation and image among stakeholders and society at large. (Gao et al., 2021)

3. Benchmarking

Benchmarking is the process of looking for best practices and trying to emulate them. Benchmarking is fast becoming standard practice among leading companies (Zaare Tajabadi & Daneshvar, 2023). Benchmarking according to Watson (1997) is a systematic and continuous measurement process, there are four basic types of benchmarking, namely: (a) internal benchmarking, is to compare the operations of a company with an internal part, (b) competitive benchmarking, comparisons are made with other rivals, for example comparing the characteristics, products, performance and functions of the same product from rivals in the same market, (c) functional benchmarking, comparing the functions of companies in various industries, (d) generic benchmarking, comparisons such as when receiving orders, customer service and strategy development.

III. RESEARCH METHOD

The method approach of this research is Systematic Literature Review (SLR). This SLR review aims to map the existing literature in each field and assess the scope and quality of the evidence. There have been few attempts to systematically map research areas in relation to content analysis. To fill this gap and achieve the objective of this study, which is to clarify the current state of affairs regarding the relationship between ERP and accounting information, a process of collecting, analyzing, and organizing a large number of scientific papers is required. The steps used in writing this article are as follows:

1. Formulation of Research Questions

At this stage, a question is formulated which is the purpose and focus of the research.

2. Article Search
This stage begins with the formulation of inclusion and exclusion criteria, identifying sources of information and ends with the initial article search process.
3. Article Collection
At this stage, article selection is carried out based on predetermined inclusion and exclusion criteria.
4. Data Synthesis
At this stage, relevant information was extracted from the selected articles, then compiled and organized the data for analysis and interpreted the findings of each article and looked for links between articles.

IV. RESEARCH RESULTS

Based on the Research Steps of Systematic Literature Review with Prism Approach, the following results are obtained:

1. Formulation of Research Question

A research question is an implicit question about something the researcher wants to know. In addition, this question determines the research objectives and methods to be used. This research question is formulated as follows:

RQ1: How is Benchmark Implementation for SCM Sustainability?

RQ2: What are the benefits and impacts of benchmarking in improving SCM efficiency?

2. Article Search

The literature search using Web Site Sciondirect focused on articles that used English and were published in the past 5 years, namely between 2019-2023. The systematic search was defined by considering several keywords, such as benchmark, sustainability, supply chain management, and green supply chain management.

3. Article Collection

Article collection was conducted using Web Site Sciondirect with keywords, such as Benchmark, Sustainability, Supply Chain Management, and Green Supply Chain Management obtained 100 articles. In the first stage, 80 articles were filtered, and 20 articles were eliminated based on the title of the article. In the next screening stage, 50 articles were obtained, of which 30 articles were excluded based on the abstracts of articles that were considered irrelevant to the research theme. At the last stage, 25 articles were obtained, where 25 other articles were not obtained. In summary can be seen in the following chart:

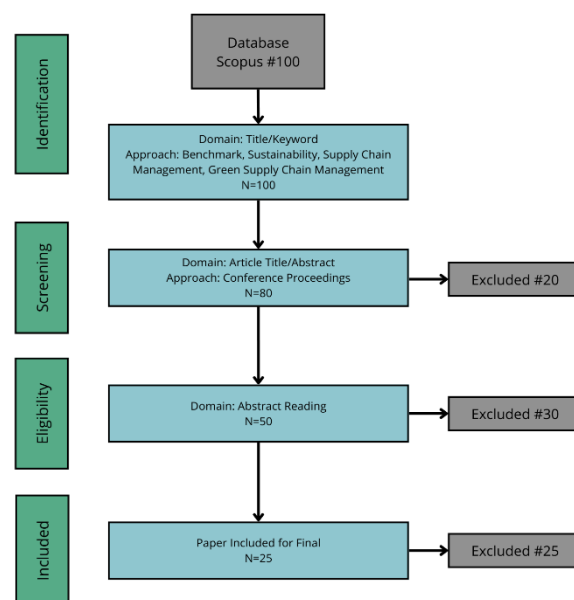


Figure 1. Article Acquisition Chart

4. Data Synthesis

Of the 25 eligible articles, all were Scopus indexed, 76% were in Q1, 12% were in Q2 and Q3, as can be seen in Figure 2.

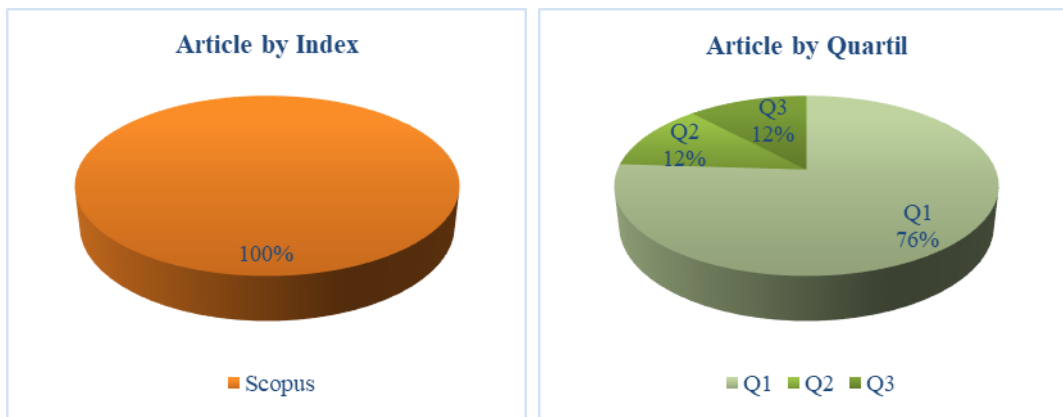


Figure 2. Article References by Publication

In Figure 3 we can see based on the year of publication, the most articles obtained were published in 2023 as many as 10 articles, which were spread across 15 journals.

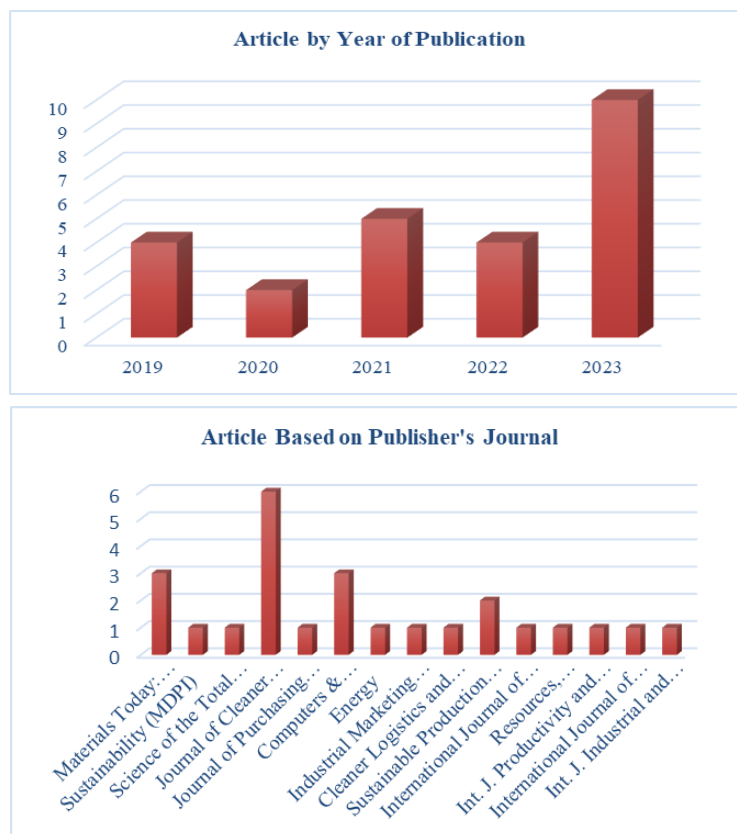


Figure 3. Distribution of referenced articles

In Figure 4, we can see that the most commonly used research method is quantitative method as many as 11 articles (44%), the rest use systematic literature review method as many as 6 articles (24%), DEA as many as 1 article (4%), case study as many as 3 articles (12%), literature review as many as 3 articles (12%), and qualitative as many as 1 article (4%). In addition, the main object of this research is influence as many as 14 articles (56%), and the rest is implementation as many as 11 articles (44%).

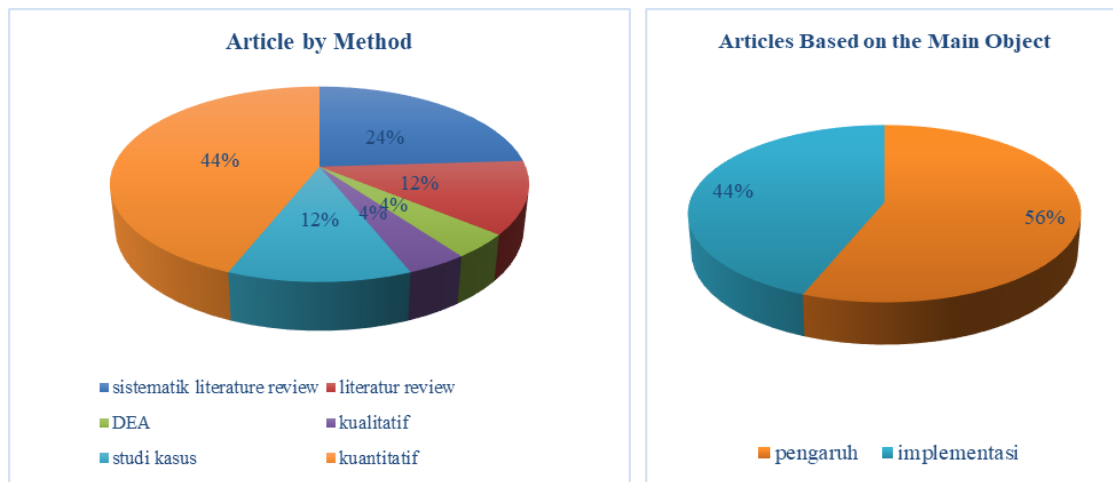


Figure 4. Articles by Method and Main Object

V. DISCUSSION

Benchmark implementation for SCM sustainability can be seen from operational performance (OP) where green SCM practices, influencing increased resonance, green purchasing, green equipment, green management centers and environmental focus lead to improved OP through various pathways. Resonance is a system where many practices are implemented simultaneously that interact with each other and increase the impact of SCM practices on OP. In implementing green SCM practices, two pressures: cognitive pressure (environmental concern and socio-cultural responsibility) and coercive pressure (coercion from suppliers and regulations) lead to more successful implementation of green purchasing decisions by manufacturers and subsequently increase OP. (Gera et al., 2022)

Benchmarking in SCM sustainability can be implemented by measuring the efficiency of decision-making units (DMU) using the data envelopment analysis (DEA) method with multiple inputs and outputs. DMU impact several bases such as transportation, businesses, universities, hospitals etc. Classical DEA considers DMU as black boxes that have no structure, and the performance evaluation of DMU is only related to inputs and outputs. However, in many cases, DMUs have network structures such as inputs and outputs. (Zaare Tajabadi & Daneshvar, 2023)

Benchmark implementation in SCM sustainability From a bioenergy SC perspective, regulations and policies are constantly changing, bringing uncertainty and complexity. From a functional point of view, there are a number of opportunities to not only optimize and consider regulations but also to be more environmentally pleasant to promote biomass SCs. These include:

1. Introduction to international standards
2. Unify incentives to improve optimization
3. The truth model and economic optimization should include other pollutants such as NOX and SO2 emissions, while considering environmental taxes.
4. Use of big data analytics
5. The existence of a cooperative governance organization model (Mina et al., 2022)

On the other hand, benchmark implementation in SCM sustainability in the aspects of environmental management, eco-design, and resource recycling are the most important GSCM themes. In addition, five key practices are environmental top management, conducting life cycle assessments, managing environmental risks, advancing recycling technologies, and integrating reverse logistics. (Mina et al., 2022)

The implementation of benchmarks in SCM sustainability in particular, when sustainability and resilience are considered by focusing on very detailed and specific objectives, these concepts appear distinguishable and separate as each concept can be achieved by implementing specific and stand-alone strategies. Whereas when the goal of achieving sustainable supply chains is considered as a long-term and general objective of building solid supply chains capable of improving economic, social, and environmental performance while preserving them, then the aspect of resilience must also be considered. In order to be sustainable, supply chains also need to maintain their status against possible damaging events, while also taking into account economic, social, and environmental aspects. Conversely, when the goal of resilience is interpreted as a general objective to anticipate, adapt and respond to all types of risks, then sustainability can contribute to building resilience by limiting social, environmental and economic risks. (Carissimi et al., 2023)

Compared with the combined benchmark model with other intelligent optimization algorithms, the proposed RACS-CM still has some advantages, which indicates that the ability of intelligent optimization algorithms to search for the global optimal solution is a key factor to influence the forecasting effect of the combined model. (Sun et al., 2023).. However, not all of these pressures (mimetic pressure, normative pressure and corrective pressure) have the expected positive impact in motivating companies' sustainability practices in the supply chain. Corrective pressure was found to have no effect on the adoption of behavioral and technical sustainability practices in the supply chain. (Romano et al., 2023)

The implementation of benchmarks to SCM sustainability has several methods that have been mentioned above and many studies have adopted certain methods to strengthen their research, one of which is MCDM and econometric methods, which strengthen the application thread of the field of study. (Khan et al., 2021). Integrated structural modeling and fuzzy AHP techniques are used to determine the interrelationships between ISCM KPI. This research will help decision makers to estimate the impact of ISCM and develop suitable strategies to improve ISCM KPI that weigh less. (Kailash et al., 2019)

However, this implementation does not always go well because there are several barriers that make the Benchmark Implementation in SCM sustainability disrupted, namely technological barriers were found to be the most pressing problem faced by the Indian manufacturing industry for adopting and implementing supply chain sustainability innovations. (Gupta et al., 2020)

When benchmarks in SCM sustainability are implemented, there will be impacts on the companies that implement them, both positive and negative impacts, but there should be more visible benefits. The stronger the implementation of certain specific GSCM practices, the better the innovation process, but the implementation of other GSCM practices will not result in more innovation. The practices that we can call GSCM practices that drive innovation are collaboration with customers, eco-design, reverse logistics, and green marketing. GSCM practices that do not trigger a broader innovation process are simply those that do not involve reciprocal exchanges with external actors. Fruitful exchanges are necessary to capture new ideas and knowledge and to influence the likelihood of external and internal actors supporting innovation outcomes. GSCM practices that do not lead to innovation are green compliance, investment recovery, environmental stewardship, and green purchasing. (Assumpção et al., 2022)

In the exemption mechanism, the "limit" only affects producer profits and social welfare. While the unit carbon quota benchmarking mechanism can directly influence the decisions of producers and retailers. The benchmarking mechanism can further stimulate producers' enthusiasm for emission reduction, and retailers also prefer the benchmarking mechanism. The impact of blockchain unit fees on overall supply chain environmental performance is complex. There are situations where higher blockchain unit costs result in lower total carbon emissions, and improved product unit environmental performance does not necessarily improve overall supply chain environmental performance. (Wang et al., 2023)

Managing the supply chain involves three closely interrelated elements: (1) supply chain network structure; (2) supply chain business processes; and (3) management components. The structure of activities/processes within and between companies is critical to creating superior competitiveness and profitability, and successful SCM requires integrating business processes with key members of the supply chain. Much friction, and thus wasted valuable resources, results from supply chains not being integrated, appropriately streamlined, and managed. A prerequisite for successful SCM is to coordinate activities within the company. One way to do this is to identify key business processes and manage them using cross-functional teams (Le, 2023)

SCSCM mediates the relationship between ethical business practices and corporate value practices, while circular economy limits the impact of ethical business practices on SCSCM. SCM initiatives, structuring circular economy practices leads to sustainable circular supply chain management practices in supplier management, warehousing, inventory, distribution and logistics, which leads to delivering value based on corporate performance as a result of analysis. (Alamelu et al., 2023).. Managing SCR requires a structured identification and assessment of risk factors, and the implementation of efficient preventive measures to mitigate them. To achieve effective SCR management while contributing to the global goal of achieving a sustainable future, it is essential to establish a comprehensive solution that considers the underlying structure behind potential risks. The utilization of FCM analysis helps in understanding the fundamental behavior of the system as well as potential future conditions, which in turn facilitates decision-making. (Soyer et al., 2023)

SCM initiatives, structuring circular economy practices leads to sustainable circular supply chain management practices in supplier management, warehousing, inventory, distribution and logistics, leading to delivering value based on company performance as a result of analysis. (Alamelu et al., 2023). Applying an effective RMS to SCN actors, focal companies need to analyze the position of actors in the SCN structure at the node and network levels. Five factors (transparency, power, supplier dependency, buyer dependency, and distance). In addition, four RMS (non-compliance, transactional, dictatorial, and collaborative). (Rezaei Vandchali et al., 2021)

The role of SCRM and SSCD to enhance CE capability. In more detail, these results clarify the need for social pressure, green economy incentives, and environmental commitments to impact SCRM and SSCD, and ultimately achieve CE capability. The next sub-section discusses the importance of these results in building CE capabilities (Centobelli et al., 2021). However, based on the characteristics of the perishable product supply chain, this article explores the risk spreading mechanism and proposes a corresponding risk management strategy to achieve the sustainability of the perishable product supply chain. (Deng et al., 2019)

Supply chain in Pakistan services and manufacturing sectors are important in terms of innovation for sustainability. Managers should develop such strategies to create synergies between the two to gain competitive advantage. (Bhutta et al., 2021). This ISM model will be useful for the manufacturing industry in the initiation and implementation activities of the ISCM benchmarking system. Based on this study, decision makers, researchers and managers can easily identify and classify VFs that have strong dependency strength or strong driving force or both dependency and strong driving force. (Kailash et al., 2019)

"HCSC management" received the highest priority and was followed by "integrated HCSC" and "sustainable HCSC" which had approximately the same weight and was preceded by "HCSC innovation and technology aspects." This points to the fact that HCSC practitioners and managers in the industry should make these factors a priority for implementation in order to improve the efficiency of HCSC operational performance. (Hossain & Thakur, 2021)

VI. CONCLUSION

Benchmark implementation in the sustainability of Supply Chain Management (SCM) can be by measuring the efficiency of the decision-making unit (DMU) with the (DEA) Data Envelopment Analysis method used to measure efficiency with many inputs and outputs and the existence of integrated structural modeling and AHP fuzzy techniques used to determine the relationship between Key performance indicators with (SCM) and will be used to evaluate the extent to which the organization or process has achieved certain goals or objectives. In the context of SCM benchmarking, KPIs are used as performance indicators to compare an organization's performance with other organizations or with industry standards.

As for the barriers encountered in the implementation of Benchmark SCM, technological barriers are identified as a pressing issue in the manufacturing industry in adopting supply chain sustainability innovations. When benchmarks in SCM sustainability are implemented, there will be an impact on the companies that implement them, both positive and negative impacts, but there should be many benefits that are more visible. For example, the implementation of GSCM can provide benefits of collaboration with customers, environmentally friendly design, and green marketing can drive innovation.

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