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Advancing Sustainability: A Systematic Review of Supply Chain Management Practices

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Abstract:
Organizations are increasingly reevaluating their supply chain practices to minimize environmental harm, economic downturns, and social discomfort to enhance sustainability. The escalation in greenhouse gas emissions, environmental pollution, and resource depletion has underscored the urgency for such transformations. Consequently, studies have increasingly focused on sustainable supply chain management (SSCM). This review synthesizes existing literature on SSCM practices, drawing from research outputs from various industries and geographical regions. The synthesis relies on the Systematic Literature Review Methodology in gathering and analyzing relevant articles published between 2014 and 2024. A total of 29 articles were reviewed, and they met the inclusion criteria for detailed content examination. The review identifies three main dimensions of SSCM: environmental, economic, and social. Environmental considerations feature prominently in the literature, with studies addressing issues such as waste management, carbon footprint reduction, and resource conservation. Economic performance, including cost management and market competitiveness, is also a significant focus, particularly in studies conducted in emerging economies. Additionally, the review highlights the growing and critical position of social sustainability within supply chain management, although it remains relatively understudied compared to environmental and economic dimensions. Overall, the findings underscore the multifaceted nature of SSCM practices and their imperative attributes for organizations in adopting holistic approaches that integrate environmental, economic, and social considerations. The review contributes to a deeper understanding of current research trends and emphasizes the need for further investigation into social sustainability within SSCM, particularly in the context of emerging economies.

Keywords: *Sustainability, supply chain, supply chain management, supply chain management practices, developing countries*

1. Introduction

Organizations are changing how they manage their supply chains to work better and reduce pollution. This is because companies are emitting more greenhouse gases, polluting the environment, and contributing to global warming. By doing this, they can make products that perform well and meet environmental rules. This shift also helps save valuable resources (Hsu & Hu, 2008; Soliman & ElKady, 2020). Studies on supply chain management recommend that organizations need to change. Scholars believe that organizations must begin thinking about sustainability and use resources efficiently because supply chains harm the environment, and we are running out of materials (Carter & Jennings, 2020). This led to more and more studies focusing on sustainability in different industries. As a result, the term "sustainable supply chain (SSC)" became widely used (Lis, Sudolska, & Tomanek, 2020; Sánchez-Flores et al., 2020). Consequently, companies are increasingly modifying their operations to align with sustainable practices, reflecting a significant shift towards more environmentally responsible business models.

For many years, industries have been causing a lot of problems, like making too much waste, polluting the air and water, warming up the planet, and using up important resources. However, things are changing now because of pressure from social media, non-governmental organizations (NGOs), and global requests like the 17 sustainable development goals set by the UN and the recent World Climate Change Conference in 2021. People, including customers and stakeholders, expect companies to be more sustainable (Shekarian et al., 2022). Today, sustainable businesses have big advantages over those that are not. So, more companies are realizing how important it is to be sustainable, especially when designing their supply chains.

The research on sustainable supply chain management (SSCM) has grown in three main areas. First, studies have focused on barriers to sustainability, which is well-established, especially in developed countries (Ashby, Leat, & Hudson-Smith, 2012). Second, there is research on understanding what practices companies use and how well they perform (Ahi & Searcy, 2015). Third, there is a lot of work on finding practical tools for implementing SSCM and making decisions (Taticchi et al., 2015; Moreno-Camacho et al., 2019). Some studies have examined how operations research methods

handle sustainability practices (Barbosa-Póvoa, da Silva, & Carvalho, 2018). Others have identified many different factors driving SSCM (Saeed & Kersten, 2019). Koberg and Longoni (2019) did a thorough review focusing on SSCM in global supply chains, which helps managers figure out how to make their supply chains more sustainable.

Alinaghian, Qiu, and Razmdoost (2020) studied how different practices in sustainable supply chain management (SSCM) affect the overall sustainability of supply chains. They investigated how firms work together and how their networks are structured. Nilsson and Göransson (2021) reviewed and found 14 key factors that are important for making SSCM work, such as how well companies collaborate and what their strategies are. Pimenta, Ball, and Salonitis (2021) looked at how sustainability practices spread through supply chains, especially because of initiatives by suppliers and manufacturing firms. They also identified factors that make these practices more effective. To standardize supply chain management practices, there is a need to review the literature on these practices to inform which practices are most relevant.

1.1. Study Objective

- To review existing literature on sustainable supply chain management practices.

1.2. Research Question

- What are the documented Sustainable Supply Chain Management Practices?

2. Research Methodology and Findings

The study utilized a systematic literature review technique to gather and assess relevant literature to address the research question, following the systematic approach outlined by Durach et al. (2017), which emphasizes the examination of previous theoretical frameworks and reputable peer-reviewed journals that have published empirical studies. This method also helps mitigate biases in the literature, as highlighted by Durach et al. (2017). A systematic literature review is a well-defined, repeatable process that aids researchers in formulating research objectives and designing a method for locating and reporting articles (Ardito et al., 2015). The process was conducted in three stages: Review Planning, where the research questions were formulated and the search protocol was established; Review Development, during which the established protocol was implemented, and relevant articles were collected based on predetermined criteria; and Review Results, which involved presenting the findings from the search and analysis of the selected studies, with the specifics of the analysis detailed in the Analysis section. The study was guided by the following question: What are the documented Sustainable Supply Chain Management Practices?

The search strategy utilized well-regarded databases, including Google Scholar, Web of Science, Science Direct, Springer Link, IEEE Xplore Digital Library, ACM Digital Library, Emerald, Taylor & Francis, JSTOR, and ProQuest. The search terms used were "sustainable," "Supply Chain," "Supply Chain Management," "Supply Chain Management Practices," "Developing Countries," "Developing Economies," and "Developing Nations." To refine the search, the focus was on articles published between 2014 and 2024, written in English, and fully accessible. This focus was driven by the need to comprehensively review literature from the last ten years. The search was limited to scholarly articles and reviews, deliberately excluding books, book chapters, technical reviews, conference papers, and editorials. The initial search yielded 80 articles, which were then evaluated based on the inclusion criteria outlined in table 1.

Inclusion Criteria	Reason for Inclusion
Articles published from 2014 to 2024	This time frame was chosen because it encompasses the latest publications available.
Reputable academic publications	Written and approved by experts and scholars in the field and made available for public access through reputable academic publications.
English Language	The English language dominates the field of sustainable supply chain management practices. English is also the common language of these researchers.
Developing Countries as classified by the UN (2017)	The focus of the analysis is on developing nations, which are characterized by limited resources and face significant levels of inequality and vulnerability
Articles that focus on Sustainable Supply Chain Management Practices	The goal is to collect pertinent evidence that aligns with the study's objectives.

Table 1: Inclusion Criteria
Source: Researcher, 2024

Initially, the titles and abstracts were analyzed to establish their pertinence. Subsequently, all replicated articles were removed. The entire content of the remaining articles underwent a thorough and careful evaluation to verify if they met the specified inclusion criteria. Ultimately, a comprehensive review was conducted on a total of 29 relevant articles.

2.1. Flow Diagram Showing the Study Selection Process

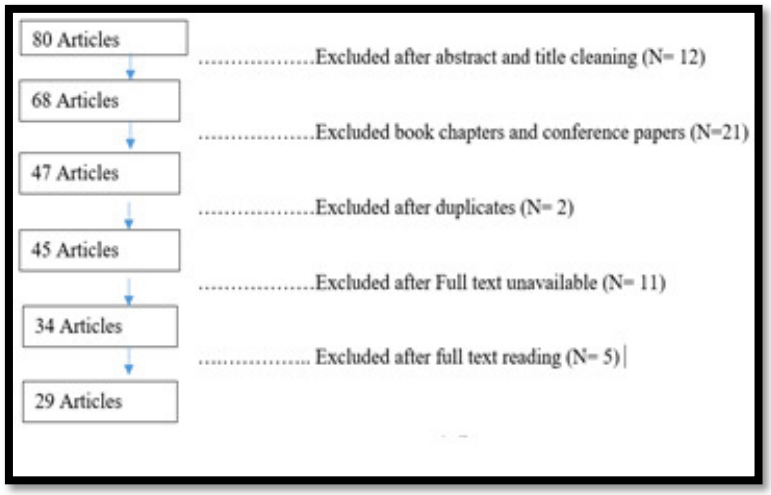

Figure 1: Flow Diagram Showing the Study Selection Process
Source: Researcher 2024

To enhance the precision, dependability, and robustness of this study while minimizing potential biases, a systematic search was conducted to gather relevant articles, following the methodology of Durach et al. (2017). Articles were selected based on inclusion criteria detailed in table 1, with exclusions for informally conducted literature surveys lacking proper citations or publication history, papers not peer-reviewed, and earlier versions of papers published in multiple journals. The researcher independently collected data from the selected papers using predetermined forms designed to ensure consistency by systematically capturing essential coding information, focusing on sustainable supply chain management practices in developing countries.

3. Analysis of Results

The findings from 29 articles involve two types of analysis. The first, a descriptive analysis, categorizes the articles by publication year, industry focus, and geographic location of the research. The second, a content analysis, examines the specific aspects of sustainability addressed in the articles. In the descriptive analysis, it was found that most studies related to sustainable supply chain management practices were conducted in 2022.

3.1. Year of Publication

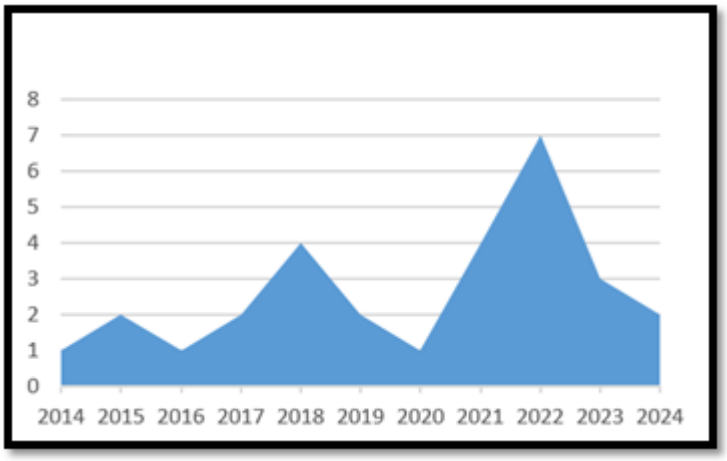

Figure 2: Publication Year of Synthesized Articles Based on the Area of Focus from 2014 to 2024
Source: Author, 2024

In terms of the approach used to conduct research, the majority of reviewed studies adopted the most usual method was structural equation model.

3.2. Distribution of Research Methodology

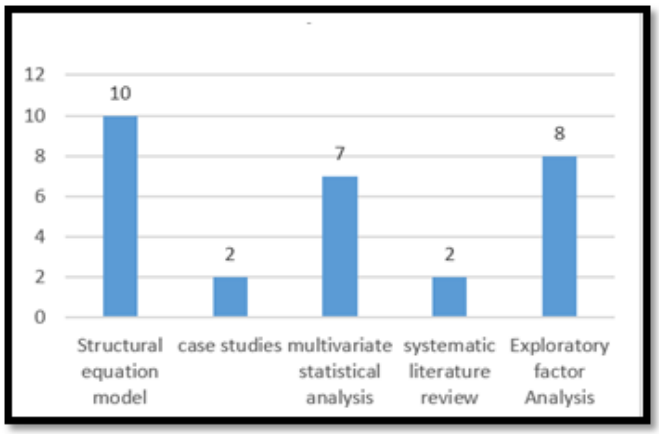

Figure 3: Research Methodology Employed
Source: Researcher, 2024

A closer analysis of the papers published in various journals indicated that the International Journals of Sustainable Transport and Journals of Environmental Management emerged as the leading contributors in investigating the topic. These two journals comprised approximately 50% of all the papers examined in the research.

3.3. Distribution of Country Being Researched

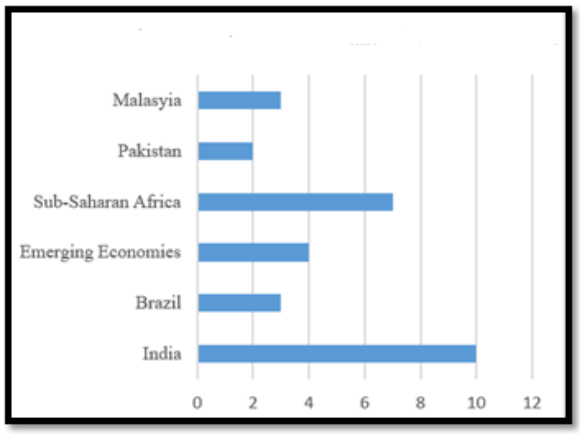

Figure 4: Country of Research
Source: Researcher, 2024

For the industry sector classification, the International Standard Industrial Classification (ISIC) of all industrial activities from the United Nations industry classification system was used. As done by Tebaldi, Bigliardi, and Bottani (2018) and Gao et al. (2017), one other sector was included to represent multiple sectors.

3.4. Industries Where Studies Have Been Done

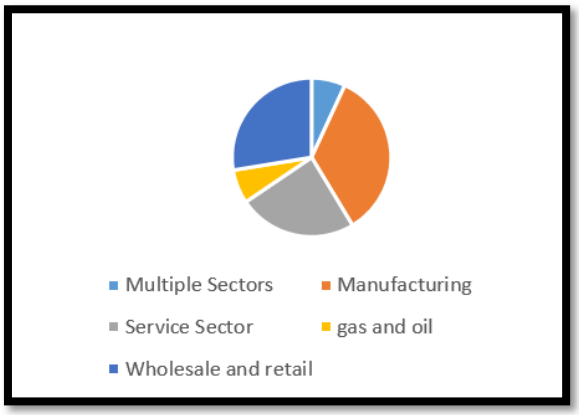

Figure 5: Industry of Focus
Source: Researcher, 2024

The analysis of the 29 articles revealed the sustainable dimensions being researched, their frequency, and the methodologies used to analyze sustainable supply chains in developing economies. Sustainability, encompassing economic, environmental, and social dimensions, has been widely accepted, allowing researchers to analyze each dimension individually or in combination. The articles were classified according to the sustainable approach they explored. As shown in figure 6, 35% of the articles adopted an integrative approach, addressing all three dimensions of sustainability. This was followed by studies focusing on both the economic and environmental dimensions, which accounted for 24%. Research solely on the environmental and social dimensions represented 14% and 7% of the articles, respectively. Additionally, 10% of the studies combined the environmental and social dimensions, while another 10% combined the social and economic dimensions.

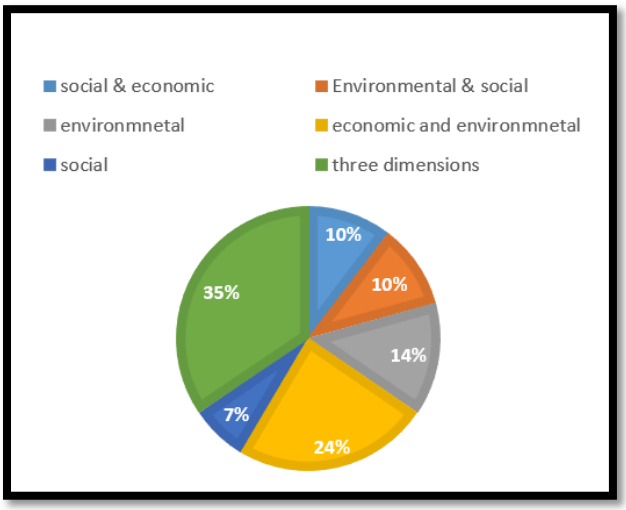

Figure 6: Sustainable Dimensions
Source: Researcher, 2024

4. Discussion of Findings

4.1. Environmental Supply Chain Management Practices

Various environmental issues have been explored in the literature, including topics like urban solid waste, carbon performance measurement, pollution reduction, waste and carbon footprint minimization, and resource use and recovery (Ali *et al.,* 2020; Marzuki *et al.,* 2017; Jakhar *et al.,* 2018; Ding *et al.,* 2018; Azevedo *et al.,* 2019; Krishnan *et al.,* 2020). Additionally, researchers have discussed enhancing supply chain environmental performance (Roy *et al.,* 2020), strategies for improving environmental sustainability (Roy *et al.,* 2020), and assessing environmental sustainability (Suhi *et al.,* 2019; Krishnan *et al.,* 2020). Other topics include barriers to sustainable procurement practices (Delmonico *et al.,* 2018), the Impact of outsourcing and supplier collaboration on environmental development (Ding *et al.,* 2018), and the significance of stakeholders in embracing sustainable supply chain management practices (Roy *et al.,* 2020).

Overall, a broad spectrum of environmental factors has been considered. This has highlighted the necessity for monitoring sustainable performance within supply chains from an environmental standpoint and the crucial role of active stakeholder involvement in encouraging, advocating, and facilitating the adoption of environmental practices throughout the supply chain in developing economies. Moreover, the increasing importance of environmental sustainability and green issues among researchers and managers is underscored by evolving regulations, changing customer expectations, and heightened pressure to purchase green products (Moktadir *et al.,* 2018).

4.2. Economic Supply Chain Management Practices

Looking at supply chains, economic performance is crucial for their success. Often, the total cost of managing the supply chain is a key measure (Esfahbodi *et al.,* 2016; Ding *et al.,* 2015; Zhang *et al.,* 2014). About 54% of the papers analyzed in this study focused on economic issues, sometimes combining them with social or environmental factors. Moreover, 77% of these articles conducted empirical research or case studies in developing economies. Some articles emphasized economic goals like sales, market share, or resource efficiency while still acknowledging the importance of costs within the supply chain (Ding *et al.,* 2016; Ding *et al.,* 2016).

Kumar *et al.* (2020) found that finance plays a crucial role in implementing social responsibility within the garment supply chains of emerging economies. Meanwhile, Esfahbodi, Zhang, and Watson (2016) concentrated on economic matters and integrated environmental concerns into their research, emphasizing the importance of adhering to environmental regulations and needs without overlooking economic performance. It is worth noting that none of the 29 articles solely focused on the economic dimension; instead, all of them incorporated an analysis of social and/or environmental aspects (Choi & Luo, 2019; Esfahbodi *et al.,* 2016).

4.3. Social Supply Chain Management Practices

Koberg and Longoni's (2019) review of global sustainable supply chain management (SSCM) literature revealed that papers focusing on only one aspect of sustainability tended to prioritize the social dimension over economic or environmental dimensions. Morais and Silvestre (2018) conducted multiple case studies in Brazil to examine how companies in their supply chains implement and achieve social sustainability. They found that motivation, collaboration, and information sharing were crucial for the effectiveness of social initiatives. Chacón Vargas et al. (2018) discovered a mutually beneficial relationship between social supply chain practices and gaining a competitive advantage in emerging economies. Additionally, Mani *et al*. (2016) argued that addressing labor issues as part of social sustainability can improve supply chain performance.

Research on the social dimension indicates that evaluating social sustainability has received relatively less attention both in academic literature and in practical applications. This area remains under-explored, particularly in the context of emerging economies (Munny et al., 2019; Badri Ahmadi *et al.,* 2017). Yawar and Seuring (2017) argued that while research in sustainable supply chain management (SSCM) tends to focus on social issues that directly impact supply chain performance, topics that could have adverse effects on society are often overlooked. They emphasized the need to investigate social issues related to social development within an SSCM framework. Furthermore, studies that adopt a triple-bottom-line perspective have suggested that the social dimension is not given equal importance compared to the economic and environmental dimensions. This is because sustainability assessments typically place greater emphasis on environmental and economic issues, leaving the social aspect relatively neglected (Motevali Haghighi *et al.,* 2016; Tajbakhsh & Hassini, 2015)

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