International Journal of Science and Research Archive

eISSN: 2582-8185

Cross Ref DOI: 10.30574/ijsra

Journal homepage: https://ijsra.net/

(RESEARCH ARTICLE)

Check for updates

# Integrating sustainability in supply chain management: Exploring the impact of sustainable practices on organizational sustainability within manufacturing companies in Sierra Leone

Sheku Alhassan Kebe *

*Faculty of Business Administration and Entrepreneurship, Institute of Public Administration and Management. University of Sierra Leone*

International Journal of Science and Research Archive, 2025, 14(02), 025-044

Publication history: Received on 16 December 2024; revised on 29 January 2025; accepted on 01 February 2025

Article DOI: https://doi.org/10.30574/ijsra.2025.14.2.0262

## Abstract

This study examines the integration of sustainability within Supply Chain Management (SCM) practices in Sierra Leone, focusing on the role of Sustainable Supply Chain Management (SSCM) as a critical framework. Employing a quantitative research design, the research investigates how SCM practices influence Organizational Sustainability (OS) through Supply Chain Efficiency and Integration (SCEI) as a mediating factor. Drawing on survey data from five manufacturing companies, structural equation modeling (SEM) validates the hypothesized relationships. Findings reveal that effective SCM practices positively impact OS, with SCEI partially mediating this relationship, indicating that efficient and integrated supply chains enhance sustainability outcomes. Furthermore, the study highlights the importance of collaboration across the supply chain, suggesting that firms that align sustainability initiatives with operational practices are better positioned to achieve both economic and environmental benefits. The study contributes theoretically by bridging the gap between SCM and sustainability literature, emphasizing the need for a holistic approach to SSCM. Practically, the results suggest that organizations in Sierra Leone should adopt integrated SCM practices to enhance sustainability and resilience in their operations. Future research should explore the applicability of these findings across different sectors and regions, as well as the long-term impacts of integrated sustainability practices on organizational performance.

**Keywords:** Sustainability; Supply Chain Management; Sustainable Supply Chain Management; Sierra Leone; Organizational Sustainability

## 1. Introduction

In recent years, sustainability has emerged as a critical area of focus in supply chain management (SCM), both within academic circles and industry practice. Companies worldwide are increasingly implementing sustainability initiatives across their supply chains in response to growing pressure from diverse stakeholders, including consumers, investors, regulatory bodies, and employees (Laurin & Fantazy, 2017; Siems et al., 2023; Thorlakson et al., 2018). This shift reflects a broader recognition that supply chains play a pivotal role in advancing environmental stewardship, social responsibility, and economic performance. As (Jia et al., 2024; Melnyk et al., 2010), assert, supply chains must be designed to achieve specific outcomes, with sustainability becoming a core objective driven by customer demands, operational efficiency, and stakeholder expectations.

Sustainability in SCM requires a holistic approach that considers environmental impact of individual products and the broader, long-term effects of supply chain processes across their entire lifecycle. This comprehensive view encompasses everything from raw material sourcing and production to distribution and end-of-life management. As such, when

* Corresponding author: Sheku Alhassan Kebe.

Copyright © 2025 Author(s) retain the copyright of this article. This article is published under the terms of the Creative Commons Attribution Liscense 4.0.

businesses engage in sustainability initiatives, it is increasingly inadequate to limit these efforts to activities within the company's immediate operations (Bakshi & Fiksel, 2003). The most impactful sustainability strategies require an integrated approach that involves both internal and external partners, including suppliers, logistics providers, third-party companies, and regulatory bodies (Lozano, 2015; Najjar et al., 2020; C.-N. Wang et al., 2017). This interconnected nature of sustainability in supply chains necessitates a broader scope that extends beyond a company's operational boundaries to include its entire value network (Norris et al., 2021).

Moreover, effective supply chain management is a cornerstone of successful sustainability practices. SCM involves a broad range of activities, including procurement, sourcing, logistics, inventory management, production scheduling, and customer relations (Lee & Kincade, 2003; Mentzer et al., 2008). By integrating these functions, companies can optimize their resource use, minimize waste, and enhance the environmental and social performance of their supply chains (Srivastava, 2007). Logistics management, a key component of SCM, is mainly significant as it deals with the movement of goods and services, ensuring that they reach customers efficiently while meeting sustainability goals (Gabdullina et al., 2020).

Effective logistics management relies on practices such as real-time data sharing, collaboration with suppliers, and the optimization of transportation routes to reduce emissions and resource consumption (Ibrahim Adedeji Adeniran et al., 2024). The importance of aligning SCM with sustainability objectives is further compounded by the increasingly complex and competitive global business environment. As companies navigate volatile markets and shifting consumer preferences, integrating sustainable practices into supply chain strategies not only mitigates risks but can also create competitive advantages (Ciccullo et al., 2020; Gouda & Saranga, 2018).

However, research has shown that firms with robust sustainability strategies in their supply chains tend to achieve superior financial performance, enhance brand reputation, and build stronger relationships with both customers and suppliers (Vesal et al., 2021). Therefore, businesses that adopt sustainability as a key tenet of their supply chain strategy are better positioned to achieve long-term success and resilience.

This study aims to investigate the relationship between supply chain management practices and organizational sustainability, with a specific focus on selected manufacturing companies in Sierra Leone. This focus is important in the context of Sierra Leone, where supply chain management practices are still evolving, and the manufacturing industry is poised for growth but faces unique challenges related to infrastructure, regulation, and resource management.

In addition to contributing to the academic discourse on SCM and sustainability, this research also has practical implications for businesses and policymakers in Sierra Leone and similar emerging markets. By examining the effectiveness of SCM practices among manufacturing companies, the study aims to provide insights into how supply chain strategies can be optimized to support organizational sustainability in the context of local challenges and opportunities.

Ultimately, the findings from this study will inform both the development of supply chain practices within Sierra Leone's manufacturing sector and provide valuable lessons for other sectors in the region seeking to incorporate sustainability into their supply chain operations.

## 2. Literature Review

This review delves into the literature surrounding two distinct yet interrelated fields: sustainability and supply chain management (SCM). Individually, both sustainability and SCM have been well-established as robust research domains. However, there is a notable rarity of empirical research that investigates the integration of these two fields, specifically in the form of Sustainable Supply Chain Management (SSCM) in Sierra Leone. While various scholars have addressed standalone topics, strategies, and practices aimed at improving SSCM performance, the literature suggests that the SSCM field is still in a nascent phase of holistic development. Currently, while the domain is evolving rapidly, few empirical studies have thoroughly explored SSCM as an integrated concept.

### 2.1. Sustainability

Sustainability is a complex concept that includes economic development, social fairness, and environmental conservation, commonly referred to as the Triple Bottom Line (TBL) or the Triple Ps: People, Planet, and Profit (Closs et al., 2011; Elkington, 1998; Hammer & Pivo, 2017). Traditionally, business models were primarily oriented towards profit maximization (Friedman, 1970), with sustainability and corporate social responsibility (CSR) being managed by external entities. However, the modern sustainability paradigm emphasizes the need for balancing economic, social,

and environmental performance, with the recognition that each dimension should reinforce and support the others (Ait Sidhoum & Serra, 2018; Elkington, 1998; Epstein, 2018). Initially, sustainability was seen as a broad, somewhat ambiguous concept. Over time, it has evolved into a more structured and actionable framework.

Sustainable development, as defined by the (World Commission on Environment and Development, 1987), advocates for meeting present needs without compromising the ability of future generations to meet their own. This framework also highlights the need to address the basic needs of the global poor while acknowledging the constraints imposed by technology and societal structures. For businesses, the challenge lay in translating this somewhat abstract concept into practical, actionable strategies (Mebratu, 1998). In the corporate context, sustainability is now viewed as the integration of social, environmental, and economic factors into strategic decision-making (Carter & Rogers, 2008; Eweje, 2011). Increasingly, stakeholder pressure has prompted companies to adopt sustainable practices, emphasizing corporate accountability and social responsibility (Closs et al., 2011; Epstein, 2018). Further, Dyllick & Hockerts, (2002), offered one of the earliest adaptations of sustainability to business, defining it as the process of "meeting the needs of a firm's stakeholders without compromising the ability of future stakeholders to meet their needs" (p. 131). This definition underscores the importance of considering the long-term interests of all stakeholders while managing economic, social, and environmental impacts.

### *2.1.1. Dimensions of Sustainability*

Sustainability is commonly understood through three key dimensions: Environmental, Social, and Economic. These three pillars are often referred to as the Triple Bottom Line framework, a concept introduced by (Elkington, 1997).

### *2.1.2. Economic Aspects of Sustainability*

Economic sustainability is primarily concerned with resource management for development and stability (International Labour Conference, 2007). It is commonly measured by indicators such as Gross Domestic Product and involves maintaining controlled inflation, efficient markets, and low unemployment rates (Buckley et al., 2009; Cricelli & Strazzullo, 2021). Also, Daly, (2014), drew a critical distinction between economic growth (a quantitative increase) and economic development (qualitative progress), emphasizing the importance of sustainability in "economies of better, not bigger." For businesses, economic sustainability entails ensuring both short- and long-term financial health, maintaining cash flow, and generating returns for shareholders (Dyllick & Hockerts, 2002). This requires the effective management of both tangible assets and intangible resources (Wheelen & Hunger, 2010).

### *2.1.3. Environmental Aspects of Sustainability*

Environmental sustainability focuses on minimizing the negative impacts on the environment and ensuring the preservation of resources for future generations (Kramar, 2014; Reijnders, 2021). Businesses are under increasing pressure to adopt eco-friendly practices, driven by the growing concerns over climate change and pollution (Kopnina & Blewitt, 2014; Sarkis & Zhu, 2018; Z. Wang & Sarkis, 2013). Some view environmental regulations as a burden; however, others see them as opportunities for innovation, cost reduction, and competitive advantage (Porter & Van der Linde, 1995). By adopting pro-environmental practices, businesses can enhance their reputation, meet legal obligations, and gain access to new markets (Epstein, 2018; Esty & Winston, 2009).

### *2.1.4. Social Aspects of Sustainability*

Corporate Social Responsibility (CSR) embodies the social dimension of sustainability, with a focus on ethical business practices and societal improvement (Manasakis, 2018). Social sustainability addresses issues such as equity, poverty, and justice, aiming to meet the social and cultural needs of various stakeholders (Kopnina & Blewitt, 2014). Social capital comprises of both human and societal capital, and it is crucial to achieving sustainability. Human capital refers to employee skills and motivation, while societal capital encompasses broader issues such as education and poverty (Dyllick & Hockerts, 2002). Effectively managing social capital enables businesses to improve stakeholder trust and gain competitive advantage (Arenas-Torres et al., 2021).

### *2.1.5. Supply Chain Management (SCM)*

The term "Supply Chain Management" was first coined by (Oliver & Webber, 1982), though the foundational ideas can be traced back to (Forrester, 1958), who recognized the interrelated nature of organizational functions, thereby laying the groundwork for the modern concept of SCM (Christopher, 1992). SCM gained prominence in the 1990s, driven by globalization, increased competition, and technological advances, which led firms to form long-term, strategic relationships with supply chain partners (Coyle et al., 2015; Mentzer et al., 2001). In fact, some scholars have posited

that competition in modern markets is now defined as "supply chain versus supply chain" (Christopher, 1992; Fang et al., 2022).

### *2.1.6. What is a Supply Chain*

Christopher, (1992) defined a supply chain as a network of organizations involved in the production and delivery of a product or service to the final consumer. Mentzer et al., (2001), further refined this concept, stating that a supply chain consists of at least three entities, all involved in the flow of products, services, information, and finances. Supply chains can vary in complexity, ranging from simple, direct supply chains to more intricate, multi-tiered networks. Historically, in the 1950s and 1960s, manufacturers focused primarily on mass production, often disregarding flexibility or strategic partnerships. In the 1970s, the advent of Manufacturing Resource Planning aimed to improve production efficiency. The 1980s introduced Just-in-Time (JIT) methods, which emphasized the need for closer, strategic buyer-supplier relationships. By the 1990s, the concept of supply chain integration began to take shape, with companies seeking to collaborate with certified suppliers to enhance cost efficiency and quality. Over time, SCM has evolved into a holistic approach that integrates key business processes across the supply chain (Masoumi et al., 2019).

### *2.1.7. SCM as a Management Philosophy, Integrated Strategy and Management of Activities*

SCM is often framed as an integrative philosophy, focused on improving supply chain performance through coordinated management of all partners involved (Cooper & Ellram, 1993). This approach involves managing the flow of goods, services, and information to create value for customers. Mentzer et al., (2001), emphasized that adopting a "supply chain orientation" is essential to recognizing the systemic implications of managing cross-organizational flows. Further, modern SCM places significant emphasis on the integration of both internal and external activities (Alfalla-Luque et al., 2018). Supply chain integration aims to foster collaboration among upstream and downstream partners, thereby reducing costs, improving efficiency, and enhancing customer service (Flynn et al., 2010; Frohlich & Westbrook, 2001). Effective integration enhances the competitiveness and efficiency of supply chains. Also, SCM also entails the management of a coordinated set of activities, including information sharing, shipping, and customer service (Mentzer et al., 2001; Swanson et al., 2018). Effective management of these activities ensures alignment, ultimately improving overall performance.

### *2.1.8. Supply Chain Strategy*

A firm's supply chain strategy significantly shapes the structure of its supply chain activities, influencing its efficiency, effectiveness, and the quality of relationships it fosters with other supply chain stakeholders (Dangol et al., 2024; Qi et al., 2009). In today's competitive business landscape, supply chain strategy is essential for achieving operational efficiency and flexibility, which are critical for maintaining a competitive edge (Ambe, 2012; Stevens, 1990). A well-integrated supply chain strategy aligns with the broader corporate strategy, business environment, and specific supply chain demands, forming a cohesive framework for effective strategy formulation (Iyer et al., 2014; Sillanpää & Sillanpää, 2014; Stank & Goldsby, 2000). However, a "one-size-fits-all" approach is often inadequate, as supply chain strategies must be customized to the unique needs and circumstances of each organization (Ambe, 2012; Boone et al., 2013; Stonebraker & Afifi, 2004; Talluri et al., 2013). Research has identified three primary supply chain strategy categories, influenced by factors such as geographic location, market volatility, and the competitive landscape (McKone-Sweet & Lee, 2009). Interestingly, these strategies often do not align directly with firms' competitive priorities, indicating a potential disconnect between supply chain strategies and broader business strategies (McKone-Sweet & Lee, 2009). To address this, a customer-centric supply chain strategy—focused on responsiveness, resiliency, reliability, and realignment (the 4Rs)—can provide firms with a significant competitive advantage. This approach enables companies to adapt swiftly to changes in the market environment while simultaneously improving key business outcomes such as sales, profitability, and customer satisfaction (Madhani, 2020). By optimizing both cost structures and productivity, firms can achieve a robust and flexible supply chain that supports sustained competitive advantage (Madhani, 2020; Stonebraker & Afifi, 2004).

### *2.1.9. Supply Chain Efficiency and Integration (SCEI)*

Supply Chain Efficiency and Integration are crucial elements in modern supply chain management, directly impacting an organization's competitiveness, performance, and sustainability outcomes (Kim & Schoenherr, 2018). With increasing global competition, companies have begun to prioritise optimizing their supply chain processes and fostering seamless coordination across various functions and organisational boundaries. This brief overview examines the importance of SCEI, its influence on business performance, and its role in driving sustainability.

Supply Chain Efficiency denotes the capacity of a supply chain to optimise resource utilization—encompassing time, materials, and labor—while reducing waste and operational expenses. Efficient supply chains deliver products on time,

in the right quantity, and at the lowest possible cost, contributing to profitability and sustainability (Ahmad & Khokhar, 2024). Efficient systems emphasise resource optimisation and waste reduction, which play a key role in achieving long-term sustainability goals (Touboulic & Walker, 2015). Supply Chain Integration involves aligning and coordinating processes and stakeholders across the entire supply chain to function cohesively (Bodendorf et al., 2023). However, it requires collaboration among suppliers, manufacturers, distributors, and retailers, ensuring smooth information, material, and product flows. Integration can be vertical (e.g., between suppliers and manufacturers) or horizontal (e.g., within different functional areas like procurement and logistics), with the goal of eliminating silos and enabling better decision-making and responsiveness (Monczka et al., 2021).

#### *2.1.10. Importance of SCEI for Competitive Advantage*

High levels of SCEI are critical for achieving a competitive edge in today's fast-paced market environment. Efficiency allows firms to reduce operational costs, streamline production schedules, and improve inventory management, thus boosting profitability and service delivery (Christopher, 2016). For instance, Toyota's adoption of just-in-time inventory systems has improved operational efficiency, resulting in cost savings and enhanced customer satisfaction. On the integration side, companies that embrace supply chain integration can more effectively respond to market changes, forecast demand, and reduce lead times. Integration also facilitates strategic collaboration with key suppliers and customers, enabling innovation and co-creation of value (Carter & Rogers, 2008). Moreover, integrated systems lead to faster decision-making, better risk management, and improved coordination, and they are all essential for adapting to customer demands in a dynamic environment.

#### *2.1.11. Linking SCEI to Organisational Sustainability*

Beyond operational benefits, SCEI is instrumental in advancing organisational sustainability. Efficient supply chains minimize waste, reduce emissions, and optimize resource use, contributing to environmental sustainability (Brandenburg et al., 2014). For instance, improved logistics operations, such as optimizing fuel consumption and minimizing empty miles, can significantly reduce a firm's carbon footprint (McKinnon et al., 2015). Supply chain integration also plays a pivotal role in promoting sustainability by fostering collaboration on sustainability initiatives across the entire value chain. When firms and their suppliers share goals related to reducing emissions or ensuring ethical labour practices, integration enhances the ability to track performance, share best practices, and innovate collectively (Yadav et al., 2021). Additionally, integrated approaches to sourcing, waste management, and procurement improve environmental, social, and economic sustainability outcomes (Carter & Rogers, 2008).

In summary, Supply Chain Efficiency and Integration are essential for creating supply chains that are efficient, flexible, and sustainable. Efficient supply chains reduce costs, improve profitability, and minimize environmental impact, while integrated supply chains enhance coordination and responsiveness.

### 2.2. Empirical discussion

#### *2.2.1. Supply Chain Management Practices and Organisational Sustainability*

The integration of sustainability principles into supply chain management is critical to the long-term success of firms, particularly in industries where resource consumption and environmental impacts are significant (Ashby et al., 2012; Bastas & Liyanage, 2018; Muñoz-Torres et al., 2018). SCMP are recognized as essential to achieving organisational sustainability by enhancing not only operational efficiency but also environmental and social outcomes. A growing body of research supports the positive relationship between SCMP and OS, demonstrating that sustainable practices in sourcing, production, and distribution directly contribute to improving the triple bottom line (economic, social, and environmental sustainability) of organizations (Brandenburg et al., 2014). However, practices such as sustainable sourcing, waste minimization, and green logistics have shown to lead to improved environmental performance, while socially responsible sourcing and fair labour practices improve the social dimension of sustainability.

Furthermore, companies that adopt SCMP tend to outperform their competitors in terms of profitability and resource optimization, ultimately reinforcing the link between effective supply chain management and overall organisational sustainability (Rao & Holt, 2005). Based on the above insights, the following hypothesis is suggested:

**H1:** SCMP positively impacts OS

#### *2.2.2. Supply Chain Management Practices and Supply Chain Efficiency and Integration*

Supply Chain Efficiency and Integration are closely related to SCMP, as the latter focuses on optimizing the flow of goods, information, and services across the supply chain. By fostering collaboration, information sharing, and technological

integration, SCMP directly impacts the efficiency and integration of supply chains (Ketchen Jr & Hult, 2007). According to a study by Dong et al., (2014), firms that adopt advanced SCMP practices such as vendor-managed inventories, collaborative forecasting, and just-in-time inventory management experience higher levels of efficiency, which translates into cost reductions and faster response times to customer demands. The impact of SCMP on SCEI can also be seen in the alignment of supply chain partners towards common goals, facilitated through collaborative planning and strategic partnerships. The adoption of digital technologies, including Internet of Things (IoT) and big data analytics, has further enhanced integration and efficiency across supply chains by enabling real-time data exchange and predictive analytics (Akbari & Hopkins, 2022; Razzak et al., 2021). These practices ensure that organizations can effectively streamline their operations and reduce inefficiencies, leading to improved performance across the entire supply chain network. In light of the aforementioned insights, the subsequent hypothesis is proposed:

**H2:** SCMP positively and significantly effects SCEI

*2.2.3. Supply Chain Efficiency and Integration and Organisational Sustainability*

The level of efficiency and integration within the supply chain plays a pivotal role in determining an organization's sustainability outcomes. Efficient and integrated supply chains minimize waste, reduce energy consumption, and lower carbon emissions, all of which contribute to a firm's environmental sustainability (Ahi & Searcy, 2013; Christopher, 2016). Furthermore, integrated supply chains improve product and service quality, enhance customer satisfaction, and contribute to long-term social sustainability through fair labour practices and ethical sourcing (Touboulic & Walker, 2015). Research indicates that organisations that prioritise SCEI, such as through lean management practices, supply chain visibility, and sustainable procurement, demonstrate superior sustainability performance. A study by Nakandala & Lau, (2019), found that supply chain integration strategies significantly reduce operational costs while also decreasing environmental impacts, thus driving overall organisational sustainability. This relationship is critical as firms look to remain competitive while also fulfilling their environmental and social responsibilities in today's increasingly sustainable business landscape (Carter & Liane Easton, 2011). Based on the above given insights, the following hypothesis is proposed:

**H3:** SCEI positively impacts OS

*2.2.4. The Mediating Role of Supply Chain Efficiency and Integration*

The fourth hypothesis explores the indirect relationship between SCMP and OS, mediated by SCEI. This mediation suggests that while SCMP directly influences OS, its impact is partially or fully mediated through improvements in supply chain efficiency and integration. Research by (Duong & Ha, 2021; Jadhav et al., 2019; Kang et al., 2018), highlights that SCMP practices, such as supplier collaboration, demand forecasting, and sustainable sourcing, significantly improve SCEI, which in turn drives enhanced sustainability outcomes in organisations. This mediation effect aligns with the resource-based view (RBV), where SCMP are considered resources that enhance organisational capabilities, such as operational efficiency and supply chain integration, which are crucial for achieving sustainability (J. B. Barney & Arikan, 2005). Furthermore, practices like cross-functional collaboration, real-time information sharing, and the integration of green technologies directly influence sustainability outcomes by enabling firms to minimise waste and energy use, reduce operational costs, and build stronger relationships with stakeholders (Wu et al., 2015). Therefore, SCMP not only affects OS directly but also improves sustainability indirectly by enhancing supply chain efficiency and integration. Thus, the subsequent hypothesis is posited:

**H4:** SCEI mediates the relationship between SCMP and OS

To summarise, the conceptual framework presented in Figure 1 outlines the relationships between the key constructs investigated in this study: Supply Chain Management Practices, Supply Chain Efficiency and Integration, and Organizational Sustainability. This framework is designed to illustrate the direct and indirect pathways through which SCMP influences organizational sustainability, both through its direct effects and via the mediation of supply chain efficiency and integration. The framework posits that SCMP directly impacts both SCEI and OS, while SCEI is also theorized to serve as a mediator that enhances the influence of SCMP on OS. By visualizing these relationships, the framework offers a structured approach to understanding how effective supply chain practices and integration contribute to sustainable outcomes in organizations, providing a foundation for testing the proposed hypotheses and further advancing research in the field of sustainable supply chain management.

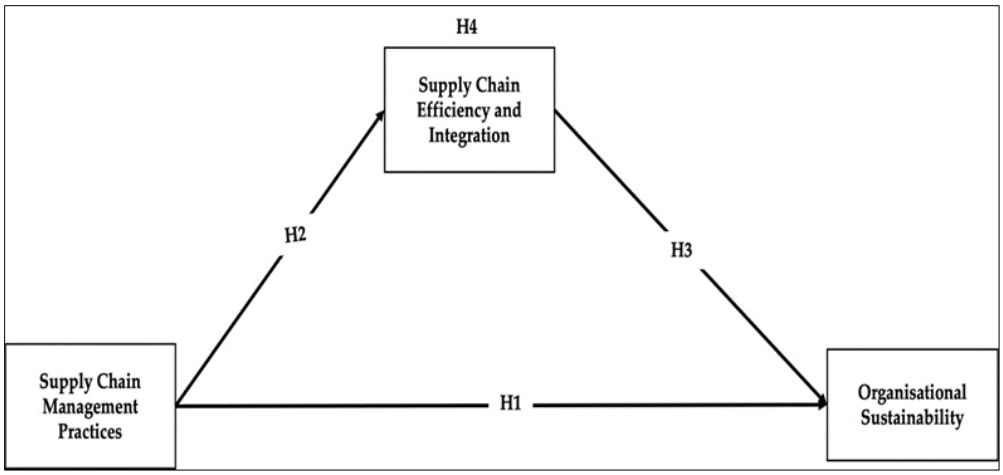


**Figure 1** Conceptual Framework

## 3. Materials and Methods

This section outlines the methodology adopted for this study, detailing the research design, sample size, data collection methods, and techniques for data analysis. The aim of the study is to explore the effect of supply chain management on organisational sustainability across five manufacturing companies located in Sierra Leone. These companies were selected based on their significant market presence and varying sizes, offering a representative sample of the sector. The research will focus on evaluating the supply chain practices within these organisations and their impact on sustainability, considering the economic, social, and environmental dimensions of sustainability (Carter & Rogers, 2008; Elkington, 1998).

### 3.1. Research Design

A quantitative research design has been adopted to ensure objective and systematic data collection and analysis. This approach is well-suited for testing hypotheses and determining relationships between variables, especially the effect of SCM on organisational sustainability (Guetterman et al., 2015). A descriptive cross-sectional design will be employed to collect data from a sample of employees across the five manufacturing companies. This design is chosen for its ability to capture a snapshot of current practices and outcomes without the need for longitudinal data (Bryman A., 2008).

### 3.2. Sample Size and Sampling Techniques

To ensure the statistical significance and reliability of the results, a sample size of 410 respondents was obtained across the five manufacturing companies. This sample size was derived from employees across the five companies, ensuring a 95% confidence level and a 5% margin of error (Saunders, 2009).

The sample was divided proportionally according to the size of each company, ensuring representation from different organisational levels. This approach provides diverse insights into the supply chain practices within each company and their effect on sustainability.

Furthermore, stratified random sampling was employed to select the respondents, ensuring that participants were chosen from different strata based on their organisational roles and the size of their respective companies (Sekaran, 2016). Stratified random sampling is ideal for ensuring that the sample reflects the diversity and heterogeneity of the workforce within each organisation. The population was first divided into distinct groups, such as top management, middle management, and operational staff. A simple random sampling technique was then applied within each group to select respondents, ensuring that every individual within each stratum had an equal chance of being included. This sampling method resulted in a final sample size of 410, which is adequate for statistical analysis.

### 3.3. Data Collection Methods

A structured survey questionnaire served as the primary tool for data collection. Surveys are widely recognised for their efficiency in collecting quantitative data from large samples, and this method allowed for standardised data collection across all participants (Y.-H. Lin et al., 2020). The questionnaire was designed to gather information on the supply chain practices in each company, focusing on their economic, environmental, and social impacts, as well as their contribution

to sustainability outcomes (Carter & Rogers, 2008). The responses were analysed using Partial Least Squares Structural Equation Modeling to examine the relationships between SCM practices and sustainability outcomes, providing insights into how SCM influences the long-term viability and performance of organisations (Christopher, 1992; Porter & Van der Linde, 1995).

### 3.4. Ethical Considerations

Ethical considerations are paramount in ensuring the integrity of the research process. This study adhered to strict ethical guidelines to protect participants and maintain the credibility of the research. Informed consent was obtained from all participants, ensuring they were fully aware of the purpose of the study and their role in the research process. Confidentiality was maintained by ensuring that all responses remained private and participants' identities were not disclosed. Participation was entirely voluntary, with the option for participants to withdraw from the study at any stage without facing any penalties. Additionally, all data was securely stored and used solely for research purposes, in line with ethical standards for data protection (Bryman, 2006).

**Table 1** Respondents' Bio data

| Variable | Item | Frequency | Percentage |
|---|---|---|---|
| Gender | Male | 211 | 51% |
| | Female | 199 | 49% |
| | Total | 410 | 100% |
| Age Range | 20-30 | 160 | 39% |
| | 31-40 | 200 | 49% |
| | 41-50 | 36 | 9% |
| | 51-60 | 12 | 3% |
| | 61 And Above | 2 | 0% |
| Educational Level | Certificate | 44 | 11% |
| | Diploma | 78 | 19% |
| | First Degree | 200 | 49% |
| | Master's Degree | 88 | 21% |
| Job Role/Level | Top Management | 43 | 10% |
| | Middle Management | 77 | 19% |
| | Operational Staff | 290 | 71% |
| Company Department | Procurement | 92 | 22% |
| | Logistics | 50 | 12% |
| | Operations | 138 | 34% |
| | Marketing | 87 | 21% |
| | Finance | 43 | 10% |
| | Total | 410 | 100% |

Source: Researcher's Field Survey 2024

Table 1 shows the demographic profile of respondents in the study, showing a balanced distribution of gender, with 51% male (211 respondents) and 49% female (199 respondents). In terms of age, the majority of respondents (49%) are in the 31-40 age range, followed by 39% in the 20-30 age range, while fewer respondents are in the older categories. Educationally, 49% of respondents hold a first degree, 21% have a master's degree, 19% possess a diploma, and 11% have a certificate. Regarding job roles, operational staff make up the largest group (71%), followed by middle management (19%) and top management (10%). The distribution across company departments reveals that the

majority of respondents work in operations (34%), followed by procurement (22%6), marketing (21%), logistics (12%), and finance (10%). Overall, the total sample consists of 410 respondents.

## 4. Results and Discussion

The study employed Structural Equation Modelling (SEM), specifically the Partial Least Squares (PLS) approach, which is widely recognised for its robustness and methodological flexibility in analysing complex relationships among constructs (Hair et al., 2017). PLS-SEM has gained significant traction in management and social sciences research due to its ability to handle small sample sizes and non-normal data distributions, making it particularly suitable for exploratory studies (Hair et al., 2017; Henseler et al., 2009). PLS-SEM was utilised to test the model and hypotheses, as it allows for the simultaneous estimation of multiple relationships between latent variables. This capability makes it an appropriate tool for examining intricate models in contexts where the focus is on both prediction and theory testing (Chin, 1998). In order to evaluate the measurement model, it was necessary to assess key indicators of construct validity and reliability, including convergent validity, discriminant validity, internal consistency, and construct reliability. These assessments ensure that the constructs accurately represent the theoretical concepts they intend to measure and that the measurement model is sound for subsequent structural analyses (Fornell & Larcker, 1981; Hair et al., 2017).

### 4.1. Assessment of Measurement Model

Before proceeding with data analysis, it is crucial to ensure the reliability and validity of the measurement model. According to established guidelines (Hair et al., 2017), constructs must demonstrate high reliability and validity for accurate results. The measurement model metrics in Table 2 reveal that all constructs meet the accepted thresholds. Factor loadings above 0.70 indicate strong relationships between items and their respective constructs (Chin, 1998). In this study, loadings range from 0.715 to 0.885, confirming strong item relevance to their constructs. Cronbach's Alpha values exceed the 0.70 threshold, with values ranging from 0.808 to 0.892, indicating internal consistency (Nunnally, 1994). Composite Reliability values, ranging from 0.808 to 0.894, further confirm the constructs' reliability (Fornell & Larcker, 1981). Additionally, Average Variance Extracted (AVE) values above 0.50 (ranging from 0.562 to 0.700) suggest sufficient convergent validity (Fornell & Larcker, 1981). These findings indicate that the measurement model is reliable and valid. Discriminant validity is confirmed by the HTMT ratio and the Fornell-Larcker criterion as shown in table 3. HTMT ratios between Organizational Sustainability (OS) and Supply Chain Efficiency and Integration (SCEI) (0.781), and OS and Supply Chain Management Practices (SCMP) (0.812) are below the 0.85 threshold, confirming discriminant validity (Henseler et al., 2015). The Fornell-Larcker criterion also shows that the square root of the AVE for each construct exceeds the correlations with other constructs, indicating that the constructs are distinct (Fornell & Larcker, 1981). These results ensure the measurement model's robustness and suitability for further analysis.

**Table 2** Reliability and Validity of Constructs

| Constructs | Loadings | VIF | α | Cr | AVE |
|---|---|---|---|---|---|
| Supply Chain Management Practices | | | 0.892 | 0.894 | 0.700 |
| SCMP1 | 0.719 | 1.384 | | | |
| SCMP2 | 0.844 | 2.368 | | | |
| SCMP3 | 0.885 | 3.648 | | | |
| SCMP4 | 0.856 | 3.045 | | | |
| SCMP5 | 0.869 | 3.204 | | | |
| Supply Chain Efficiency and Integration | | | 0.808 | 0.815 | 0.562 |
| SCEI1 | 0.757 | 1.989 | | | |
| SCEI2 | 0.726 | 2.202 | | | |
| SCEI3 | 0.771 | 2.108 | | | |
| SCEI4 | 0.715 | 1.597 | | | |
| SCEI5 | 0.776 | 1.698 | | | |
| Organisational Sustainability | | | 0.838 | 0.84 | 0.673 |

| | | | | | |
|---|---|---|---|---|---|
| OS1 | 0.814 | 1.910 | | | |
| OS2 | 0.791 | 1.700 | | | |
| OS3 | 0.818 | 1.883 | | | |
| OS4 | 0.857 | 2.175 | | | |

Source: Researcher's Field Survey 2024

**Table 3** Discriminant validity

| **HTMT Ratio** | **OS** | **SCEI** | **SCMP** |
|---|---|---|---|
| OS | | | |
| SCEI | 0.781 | | |
| SCMP | 0.812 | 0.59 | |
| **Fornell-Larcker Criterion** | **OS** | **SCEI** | **SCMP** |
| OS | 0.82 | | |
| SCEI | 0.665 | 0.749 | |
| SCMP | 0.722 | 0.522 | 0.837 |

Source: Researcher's Field Survey 2024

Table 4 presents the predicted SEM coefficients for the proposed model.

**Table 4** Hypothesis testing results.

| **Hypothesis** | **Relationship** | **β** | **T stat** | **P values** | **Decision** |
|---|---|---|---|---|---|
| H1 | SCMP -> OS | 0.515 | 15.486 | 0.000 | Accepted |
| H2 | SCMP -> SCEI | 0.522 | 13.991 | 0.000 | Accepted |
| H3 | SCEI -> OS | 0.396 | 12.238 | 0.000 | Accepted |

Source: Researcher's Field Survey 2024

The result shown in **Table 4** provides strong evidence supporting the hypothesised relationships in the study. Hypothesis 1 (H1), which posits that Supply Chain Management Practices (SCMP) have a positive effect on Organisational Sustainability (OS), shows a path coefficient (β) of 0.515, with a T-statistic of 15.486 and a P-value of 0.000. This indicates a statistically significant positive relationship, leading to the acceptance of this hypothesis. Hypothesis 2 (H2), which suggests that Supply Chain Management Practices (SCMP) positively influence Supply Chain Efficiency and Integration (SCEI), also presents a strong relationship with a path coefficient (β) of 0.522, a T-statistic of 13.991, and a P-value of 0.000. Given the significance of these values, this hypothesis is also accepted. Hypothesis 3 (H3), indicating that Supply Chain Efficiency and Integration (SCEI) positively affects Organisational Sustainability (OS), shows a path coefficient (β) of 0.396, a T-statistic of 12.238, and a P-value of 0.000. This result further supports the hypothesis, confirming that supply chain efficiency and integration contribute positively to organisational sustainability.

**Table 5** Mediation testing results**.**

| **Hypothesis** | **Relationship** | **β** | **T stat** | **P values** | **Decision** |
|---|---|---|---|---|---|
| H4 | SCMP -> SCEI -> OS | 0.207 | 8.926 | 0.000 | Accepted |

Source: Researcher's Field Survey 2024

Hypothesis 4 (H4), which explores the indirect relationship where Supply Chain Management Practices (SCMP) affect Organisational Sustainability (OS) through Supply Chain Efficiency and Integration (SCEI), shows a path coefficient (β) of 0.207, with a T-statistic of 8.926 and a P-value of 0.000. This indicates a statistically significant indirect effect, confirming that SCEI mediates the relationship between SCMP and OS. Therefore, this hypothesis is accepted, suggesting that SCMP contributes to Organisational Sustainability indirectly by enhancing Supply Chain Efficiency and Integration.

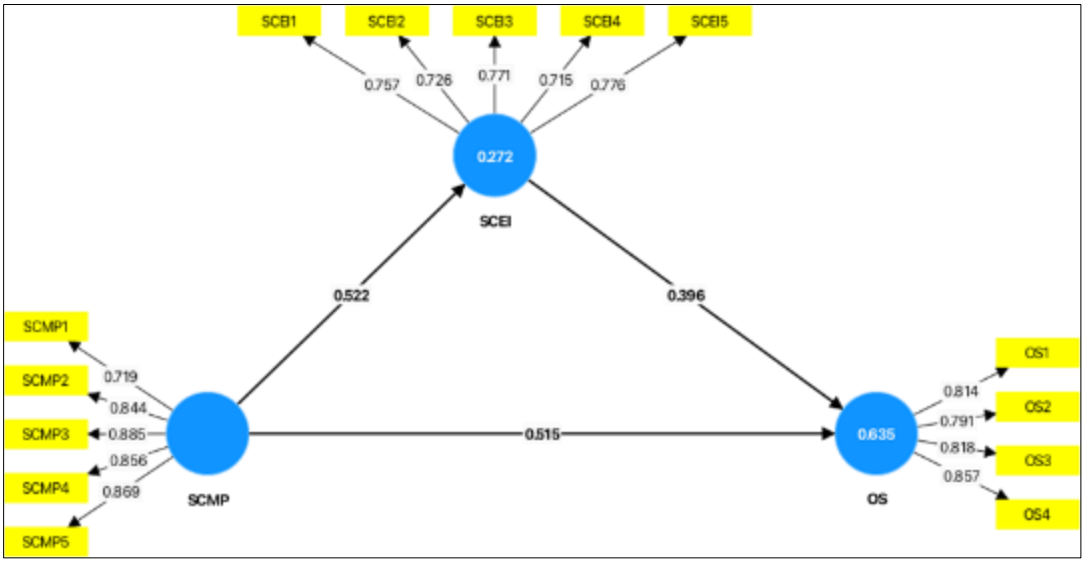


**Figure 2** Structural Model Analysis of Constructs

### 4.2. Summary

The measurement model assessment demonstrates that all constructs meet the required thresholds for reliability and validity. Factor loadings (0.715 to 0.885) indicate strong item reliability (Chin, 1998). Cronbach's Alpha values (0.808 to 0.892) and composite reliability (0.808 to 0.894) exceed acceptable thresholds, confirming construct reliability (Fornell & Larcker, 1981; Nunnally, 1994). AVE values above 0.50 further establish convergent validity (Fornell & Larcker, 1981). Discriminant validity is supported by HTMT ratios and the Fornell-Larcker criterion (Fornell & Larcker, 1981; Henseler et al., 2015). However, Supply Chain Management Practices significantly influence both Supply Chain Efficiency and Integration and Organizational Sustainability. SCEI also directly impacts OS, Also, SCEI mediates the relationship between SCMP and OS, highlighting the dual role of SCMP in enhancing sustainability both directly and through improved supply chain efficiency and integration.

## 5. Discussion

The results from this study strongly validate the hypothesized relationships between Supply Chain Management Practices, Supply Chain Efficiency and Integration, and Organisational Sustainability. This in-depth discussion explores the significance of these findings, drawing from various scholarly sources to frame the results within existing literature and provide a deeper understanding of their implications.

### 5.1. SCMP and Organisational Sustainability

The first hypothesis (H1), positing a positive relationship between SCMP and OS, is strongly supported by the results, which show a path coefficient of 0.515 with a T-statistic of 15.486 and a P-value of 0.000. This indicates that effective supply chain management practices significantly contribute to organisational sustainability. This outcome aligns with a growing body of literature that emphasizes the role of supply chains in fostering sustainability outcomes across economic, social, and environmental dimensions.

Sustainability in supply chain management has become a critical focus for organizations seeking long-term viability and competitive advantage. (Ali et al., 2024; Carter & Rogers, 2008; Pagell & Wu, 2009), argue that sustainable supply chain practices directly impact environmental and social outcomes, leading to enhanced corporate social responsibility (CSR) and resource efficiency. Furthermore, (Elkington, 1997), Triple Bottom Line framework emphasizes that companies

must consider environmental, social, and economic performance to achieve sustainability, with supply chain practices at the heart of this integration.

The favourable correlation identified in this study can be elucidated through the Resource-Based View, which posits that organisation with better resources—such as efficient supply chain management—can attain competitive advantages that bolster sustainability objectives (J. Barney, 1991). For example, adopting green logistics and eco-friendly sourcing strategies enables organizations to reduce their carbon footprint while maintaining profitability. Moreover, (Golicic & Smith, 2013; Sharma et al., 2023; Z. Wang & Sarkis, 2013), argue that integrating environmental concerns into the supply chain positively influences a company's sustainability performance by reducing waste and improving resource usage, thereby contributing to both environmental and economic sustainability.

### 5.2. SCMP and Supply Chain Efficiency and Integration

Hypothesis 2 (H2) proposes that SCMP positively influences Supply Chain Efficiency and Integration, which is also supported by the data. The path coefficient of 0.522, with a T-statistic of 13.991 and a P-value of 0.000, indicates that effective SCMP are strongly associated with higher levels of efficiency and integration in the supply chain. The positive relationship found here mirrors the conclusions of (Simchi-Levi et al., 2018), who argue that supply chain practices such as demand forecasting, inventory management, and supplier integration significantly improve both efficiency and the overall performance of the supply chain. Efficiency gains are often linked to practices like just-in-time inventory, which minimizes waste and reduces the cost of holding inventory (Schonberger, 2007). These practices lead to a leaner supply chain, where resources are optimized and bottlenecks are minimized, resulting in improved operational performance. Furthermore, Chen et al., (2009), assert that integration is the seamless collaboration between supply chain partners that enables information flow and coordination, reducing delays and costs. The integration of both upstream (suppliers) and downstream (customers) relationships is crucial for enhancing overall supply chain performance (Christopher, 2016). This integration, facilitated by SCMP, not only improves efficiency but also ensures that organizations can respond more quickly to changing market conditions, thus fostering adaptability in volatile environments. From an organizational theory perspective, integration is often tied to the idea of creating dynamic capabilities—the ability of organizations to continuously adapt and reconfigure their supply chain to meet evolving needs (Teece et al., 1997). The findings of this study thus resonate with this theoretical view, showing that SCMP enable organizations to build the necessary capabilities for achieving higher supply chain integration and efficiency.

### 5.3. SCEI and Organisational Sustainability

The third hypothesis (H3) asserts that Supply Chain Efficiency and Integration has a positive effect on Organisational Sustainability. The path coefficient of 0.396, with a T-statistic of 12.238 and a P-value of 0.000, confirms that more efficient and integrated supply chains contribute to better sustainability outcomes. This finding is consistent with the Environmental Supply Chain Management (ESCM) literature, which emphasizes that an efficient and integrated supply chain is key to improving both operational and sustainability performance (Srivastava, 2007). However, Zelbst et al., (2010), argue that companies with efficient supply chains are better positioned to adopt sustainable practices, such as minimizing waste, reducing energy consumption, and improving logistics sustainability, because the cost savings from operational efficiencies can be reinvested in green technologies or sustainable practices.

Moreover, Awaysheh & Klassen, (2010), suggest that supply chain integration not only reduces inefficiencies but also creates opportunities for firms to collaborate on sustainability initiatives, such as joint environmental goals or carbon footprint reduction projects. This collaboration, facilitated by integrated processes, enables firms to scale their sustainability efforts and align them with broader corporate strategies, which in turn enhances organisational sustainability. SCEI can also help organizations to reduce risk exposure associated with supply chain disruptions. As noted by (Pettit et al., 2010; Rice & Sheffi, 2005; Zavala-Alcívar et al., 2020), an efficient and integrated supply chain reduces vulnerabilities in sourcing, manufacturing, and distribution, making organizations more resilient in the face of economic, environmental, or social shocks. This resilience is increasingly viewed as an integral component of sustainability, as companies must be adaptable to sustain their operations over the long term.

### 5.4. The mediation Effect of SCMP

Finally, Hypothesis 4 (H4) explores the indirect relationship between SCMP and OS, mediated by SCEI. The results reveal a path coefficient of 0.207, a T-statistic of 8.926, and a P-value of 0.000, confirming that the effect of SCMP on OS is partially mediated by SCEI. This finding underscores the importance of not only adopting supply chain practices but also ensuring that they are effectively integrated and aligned across the value chain to generate sustainability outcomes. Further, (Flint & Golicic, 2009; Kang et al., 2018), assert that companies that consistently learn and refine their supply chain practices—via integration and efficiency enhancements—can secure a sustainable long-term competitive edge.

SCMP that promote such learning (e.g., supplier development, process improvement) help firms optimize supply chain operations and align them with sustainability objectives. The indirect effect thus suggests that organizations with better-integrated and more efficient supply chains are better positioned to adopt and sustain environmentally and socially responsible practices (Ali et al., 2024; Kang et al., 2018).

In summary, this study provides strong empirical evidence that SCMP significantly affect SCEI, which in turn positively impacts OS. The findings emphasize that sustainable organizational practices are not only driven by efficient supply chains but are also contingent upon effective integration across supply chain activities. The indirect role of SCEI as a mediator underscores the importance of integrating sustainability goals into every aspect of the supply chain, thereby ensuring that SCMP lead to tangible sustainability outcomes. The theoretical implications, supported by numerous authoritative sources, suggest that organizations seeking sustainability must adopt comprehensive, integrated, and efficient supply chain practices that align with environmental, social, and economic goals.

### 5.5. Implications of the study

The findings of this study have significant theoretical and practical implications for both the field of supply chain management and organisational sustainability.

#### *5.5.1. Theoretical Implication*

The results strongly validate the Resource-Based View, which suggests that superior resources, such as effective SCM practices, enable firms to achieve competitive advantages and meet sustainability goals (J. Barney, 1991). In particular, the study confirms that SCM practices, including green logistics and eco-friendly sourcing, are pivotal in enhancing organizational sustainability, aligning with the Triple Bottom Line framework (Elkington, 1997). Additionally, this research reinforces the importance of dynamic capabilities in improving Supply Chain Efficiency and Integration. According to Teece et al., (1997), firms that continuously adapt their supply chain processes are better positioned to build the capabilities necessary for both efficiency and sustainability. The positive relationship between SCEI and OS also supports the notion that an efficient and integrated supply chain is crucial for sustainability outcomes, as highlighted by the Environmental Supply Chain Management (ESCM) literature (Srivastava, 2007). Furthermore, the indirect effect of SCMP on OS through SCEI emphasizes the critical role of integration in aligning sustainability goals with operational practices, corroborating the work of (M.-J. J. Lin & Chen, 2008), who note that continuous improvement and integration are essential for long-term competitive advantage.

#### *5.5.2. Practical Implication*

The findings provide actionable insights for managers aiming to enhance both their supply chain efficiency and sustainability. By adopting and promoting practices such as supplier integration, inventory management, and demand forecasting, organisations can significantly improve their operational performance while simultaneously contributing to sustainability efforts (Simchi-Levi et al., 2018). Moreover, this study underscores the importance of collaboration across the supply chain. Firms that integrate sustainability initiatives with suppliers and customers are better positioned to reduce waste, improve logistics sustainability, and minimise energy consumption, thereby achieving both operational and environmental benefits (Awaysheh & Klassen, 2010; Zelbst et al., 2010).

Additionally, the study highlights that efficient and integrated supply chains are more resilient, as they can better withstand disruptions from economic, social, or environmental shocks, aligning with the work of (Pettit et al., 2010; Rice & Sheffi, 2005). This resilience is particularly important for organizations seeking to ensure long-term sustainability amidst an increasingly volatile business environment. Finally, the mediation effect of SCEI suggests that organizations must not only adopt effective SCM practices but also ensure that these practices are integrated across the entire value chain to generate meaningful sustainability outcomes. Thus, as Teece et al., (1997), asserts, firms that continually learn and adapt their supply chain operations can align them with broader sustainability objectives, leading to sustained competitive advantages.

### 5.6. Limitations and Future Research Directions

While the findings provide valuable insights into the impact of Supply Chain Management Practices on Organizational Sustainability, several limitations must be addressed. First, the study's small sample of five manufacturing companies in Sierra Leone limits the generalizability to other regions or sectors, suggesting future research should include a more diverse sample to enhance external validity (Carter & Rogers, 2008).

Additionally, the cross-sectional design captures a snapshot in time but does not account for long-term changes, so longitudinal studies would provide a deeper understanding of evolving dynamics (Bryman, 2006). The reliance on self-

reported data introduces potential biases, and future research could incorporate objective data from sustainability reports for a more accurate analysis. Finally, the study's focus on broad SCM practices leaves out specific practices like green logistics and supplier collaboration, which could be explored in future research to better understand their individual contributions to sustainability outcomes (Simchi-Levi et al., 2018).

Future research could expand by including a broader range of organizations across different regions, industries, and cultural contexts, enhancing the generalizability of findings and providing deeper insights into the role of Supply Chain Management Practices in sustainability (Carter & Rogers, 2008). Longitudinal studies would help track how SCMP and Organizational Sustainability evolve over time, establishing clearer causal relationships. Integrating objective performance data with self-reported measures would reduce bias and improve accuracy. Examining cultural and contextual factors, as well as specific SCM practices like supplier integration and green logistics, would offer insights into effective sustainability strategies. Finally, developing standardized sustainability metrics would enable better cross-industry comparisons and benchmarks for sustainable supply chain performance (Elkington, 1997).

## 6. Conclusion

This study provides compelling evidence of the significant role that Supply Chain Management Practices play in driving Organizational Sustainability within the context of manufacturing companies in Sierra Leone. The findings support the positive relationships between SCMP, Supply Chain Efficiency and Integration, and OS, highlighting the critical role of efficient, integrated supply chains in achieving sustainable outcomes across environmental, social, and economic dimensions. The study emphasizes that SCMP enhance operational performance and contribute to sustainability goals, especially when integrated across the value chain. Furthermore, the mediation effect of SCEI underscores the importance of aligning supply chain practices with sustainability objectives for long-term success. While the study has its limitations, it provides valuable insights into the impact of SCMP on sustainability, offering a foundation for future research. By expanding the scope of this research, incorporating objective performance data, and exploring specific SCM practices, future studies could deepen our understanding of how supply chains can be optimized for better sustainability outcomes, benefiting both organizations and society as a whole.

## Compliance with ethical standards

### *Acknowledgments*

I sincerely appreciate the support and contribution of Mr. Ibrahim Alusine Kebe

### *Statement of informed consent*

Informed consent was obtained from all individual participants included in the study.

### *Funding*

The author declares no financial support for the research, authorship, or publication of this article.

### *Author contributions*

The author declare that he contributed fully, approve the work, and take full responsibility. The article was written by Sheku Alhassan Kebe.

## References

[1] Ahi, P., & Searcy, C. (2013). A comparative literature analysis of definitions for green and sustainable supply chain management. Journal of Cleaner Production, 52, 329–341.

[2] Ahmad, F., & Khokhar, S. (2024). Examining the Impact of Sustainable Supply Chain Management Practices and Supply Chain Ambidexterity on Sustainability Performance. Operations and Supply Chain Management: An International Journal, 17(3), 179–190.

[3] Ait Sidhoum, A., & Serra, T. (2018). Corporate Sustainable Development. Revisiting the Relationship between Corporate Social Responsibility Dimensions. Sustainable Development, 26(4), 365–378. https://doi.org/10.1002/sd.1711

[4] Akbari, M., & Hopkins, J. L. (2022). Digital technologies as enablers of supply chain sustainability in an emerging economy. Operations Management Research, 15, 689–710. https://api.semanticscholar.org/CorpusID:248701327

[5] Alfalla-Luque, R., Machuca, J. A. D., & Marin-Garcia, J. A. (2018). Triple-A and competitive advantage in supply chains: Empirical research in developed countries. International Journal of Production Economics, 203, 48–61.

[6] Ali, B. M., Majeed, M. A., Latif, N., & Aldrickzler, R. (2024). Sustainable Supply Chain Management Practices for Environmental and Social Integrity. Journal of Ecohumanism, 3(5), 1000–1016. https://doi.org/10.62754/joe.v3i5.3951

[7] Ambe, I. M. (2012). Determining an optimal supply chain strategy. Journal of Transport and Supply Chain Management, 6, 126–147. https://api.semanticscholar.org/CorpusID:154018894

[8] Arenas-Torres, F., Bustamante-Ubilla, M., & Campos-Troncoso, R. (2021). The Incidence of Social Responsibility in the Adoption of Business Practices. Sustainability, 13(5), 2794. https://doi.org/10.3390/su13052794

[9] Ashby, A., Leat, M., & Hudson-Smith, M. (2012). Making connections: a review of supply chain management and sustainability literature. Supply Chain Management: An International Journal, 17(5), 497–516. https://doi.org/10.1108/13598541211258573

[10] Awaysheh, A., & Klassen, R. D. (2010). The impact of supply chain structure on the use of supplier socially responsible practices. International Journal of Operations & Production Management, 30(12), 1246–1268.

[11] Bakshi, B. R., & Fiksel, J. (2003). The quest for sustainability: Challenges for process systems engineering. AIChE Journal, 49(6), 1350–1358. https://doi.org/10.1002/aic.690490602

[12] Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. Journal of Management, 17(1), 99–120. https://doi.org/10.1177/014920639101700108

[13] Barney, J. B., & Arikan, A. M. (2005). The resource-based view: origins and implications. The Blackwell Handbook of Strategic Management, 123–182.

[14] Bastas, A., & Liyanage, K. (2018). ISO 9001 and Supply Chain Integration Principles Based Sustainable Development: A Delphi Study. Sustainability, 10(12), 4569. https://doi.org/10.3390/su10124569

[15] Bodendorf, F., Dentler, S., & Franke, J. (2023). Digitally enabled supply chain integration through business and process analytics. Industrial Marketing Management, 114, 14–31. https://doi.org/10.1016/j.indmarman.2023.07.005

[16] Boone, C., Craighead, C. W., Hanna, J. B., & Nair, A. (2013). Implementation of a System Approach for Enhanced Supply Chain Continuity and Resiliency: A Longitudinal Study†. Journal of Business Logistics, 34, 222–235. https://api.semanticscholar.org/CorpusID:168140545

[17] Brandenburg, M., Govindan, K., Sarkis, J., & Seuring, S. (2014). Quantitative models for sustainable supply chain management: Developments and directions. European Journal of Operational Research, 233(2), 299–312.

[18] Bryman, A. (2006). Integrating quantitative and qualitative research: how is it done? Qualitative Research, 6(1), 97–113. https://doi.org/10.1177/1468794106058877

[19] Bryman A. (2008). Why do researchers integrate/combine/mesh/blend/mix/merge/fuse quantitative and qualitative research. In Bergman M. M. (Ed.), . SAGE.

[20] Buckley, G., Salazar-Xirinachs, J.-M., & Henriques, M. (2009). The Promotion of Sustainable Enterprises: Graeme Buckley, Michael Henriques and Jose-Manuel Salazar-Xirinachs. International Labour Office.

[21] Carter, C. R., & Liane Easton, P. (2011). Sustainable supply chain management: evolution and future directions. International Journal of Physical Distribution & Logistics Management, 41(1), 46–62.

[22] Carter, C. R., & Rogers, D. S. (2008). A framework of sustainable supply chain management: moving toward new theory. International Journal of Physical Distribution & Logistics Management, 38(5), 360–387.

[23] Chen, H., Daugherty, P. J., & Roath, A. S. (2009). Defining and operationalizing supply chain process integration. Journal of Business Logistics, 30, 63–84. https://api.semanticscholar.org/CorpusID:167340533

[24] Chin, W. W. (1998). The partial least squares approach to structural equation modeling. Modern Methods for Business Research/Lawrence Erlbaum Associates.

[25] Christopher, M. (1992). Logistics and Supply Chain Management (1st ed.). Financial Times / Pitman.

[26] Christopher, M. (2016). Logistics and Supply Chain Management: Logistics & Supply Chain Management. Pearson UK.

[27] Ciccullo, F., Pero, M., Gosling, J., Caridi, M., & Purvis, L. (2020). When Sustainability Becomes an Order Winner: Linking Supply Uncertainty and Sustainable Supply Chain Strategies. Sustainability, 12(15), 6009. https://doi.org/10.3390/su12156009

[28] Closs, D. J., Speier, C., & Meacham, N. (2011). Sustainability to support end-to-end value chains: the role of supply chain management. Journal of the Academy of Marketing Science, 39, 101–116.

[29] Cooper, M. C., & Ellram, L. M. (1993). Characteristics of supply chain management and the implications for purchasing and logistics strategy. The International Journal of Logistics Management, 4(2), 13–24.

[30] Coyle, J. J., Thomchick, E. A., & Ruamsook, K. (2015). Environmentally sustainable supply chain management: an evolutionary framework. Marketing Dynamism & Sustainability: Things Change, Things Stay the Same… Proceedings of the 2012 Academy of Marketing Science (AMS) Annual Conference, 365–374.

[31] Cricelli, L., & Strazzullo, S. (2021). The Economic Aspect of Digital Sustainability: A Systematic Review. Sustainability, 13(15), 8241. https://doi.org/10.3390/su13158241

[32] Daly, H. E. (2014). Beyond growth: the economics of sustainable development. Beacon Press.

[33] Dangol, R., Eunni, R. V., Bateman, P. J., & Marculetiu, A. (2024). Aligning cooperative supply chain relationships with firm strategy: a cross-disciplinary analysis. Management Research Review, 47(8), 1268–1285. https://doi.org/10.1108/MRR-08-2023-0614

[34] Dong, Y., Dresner, M. E., & Yao, Y. (2014). Beyond Information Sharing: An Empirical Analysis of Vendor-Managed Inventory. Production and Operations Management, 23, 817–828. https://api.semanticscholar.org/CorpusID:153572124

[35] Duong, N.-H., & Ha, Q.-A. (2021). The impacts of social sustainability practices on supply chain performance: Mediating role of supply chain integration. Journal of Distribution Science, 19(11), 37–48.

[36] Dyllick, T., & Hockerts, K. (2002). Beyond the business case for corporate sustainability. Business Strategy and the Environment, 11(2), 130–141.

[37] Elkington, J. (1997). Cannibals with Forks: The Triple Bottom Line of 21st Century Business. Stoney Creek, CT: New Society Publishers.

[38] Elkington, J. (1998). Cannibals with Forks: The Triple Bottom Line of 21st Century. . New Society Publishers.

[39] Epstein, M. J. (2018). Making sustainability work: Best practices in managing and measuring corporate social, environmental and economic impacts. Routledge.

[40] Esty, D. C., & Winston, A. (2009). Green to gold: How smart companies use environmental strategy to innovate, create value, and build competitive advantage. John Wiley & Sons.

[41] Eweje, G. (2011). A shift in corporate practice? Facilitating sustainability strategy in companies. Corporate Social Responsibility and Environmental Management, 18(3), 125–136.

[42] Fang, H., Fang, F., Hu, Q., & Wan, Y. (2022). Supply Chain Management: A Review and Bibliometric Analysis. Processes, 10(9), 1681. https://doi.org/10.3390/pr10091681

[43] Flint, D. J., & Golicic, S. L. (2009). Searching for competitive advantage through sustainability. International Journal of Physical Distribution & Logistics Management, 39, 841–860. https://api.semanticscholar.org/CorpusID:166635064

[44] Flynn, B. B., Huo, B., & Zhao, X. (2010). The impact of supply chain integration on performance: A contingency and configuration approach. Journal of Operations Management, 28(1), 58–71.

[45] Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. Journal of Marketing Research, 18(1), 39–50.

[46] Forrester, J. W. (1958). Industrial dynamics: A major breakthrough for decision makers. (4th ed., Vol. 36). Harvard Business Review.

[47] Frohlich, M. T., & Westbrook, R. (2001). Arcs of integration: an international study of supply chain strategies. Journal of Operations Management, 19(2), 185–200.

[48] Gabdullina, L., Kirdasinova, K., Amanbayeva, A., Zeinullina, A., Tlessova, E., & Azylkanova, S. A. (2020). Transport and logistics innovations in supply chain management: Evidence from Kazakhstan. Uncertain Supply Chain Management, 255–266. https://doi.org/10.5267/j.uscm.2020.1.002

[49] Golicic, S. L., & Smith, C. D. (2013). A Meta-Analysis of Environmentally Sustainable Supply Chain Management Practices and Firm Performance. Journal of Supply Chain Management, 49(2), 78–95. https://doi.org/10.1111/jscm.12006

[50] Gouda, S. K., & Saranga, H. (2018). Sustainable supply chains for supply chain sustainability: impact of sustainability efforts on supply chain risk. International Journal of Production Research, 56(17), 5820–5835. https://doi.org/10.1080/00207543.2018.1456695

[51] Guetterman, T. C., Fetters, M. D., & Creswell, J. W. (2015). Integrating Quantitative and Qualitative Results in Health Science Mixed Methods Research Through Joint Displays. The Annals of Family Medicine, 13(6), 554–561. https://doi.org/10.1370/afm.1865

[52] Hair, J., Hollingsworth, C. L., Randolph, A. B., & Chong, A. Y. L. (2017). An updated and expanded assessment of PLS-SEM in information systems research. Industrial Management & Data Systems, 117(3), 442–458. https://doi.org/10.1108/IMDS-04-2016-0130

[53] Hammer, J., & Pivo, G. (2017). The Triple Bottom Line and Sustainable Economic Development Theory and Practice. Economic Development Quarterly, 31(1), 25–36. https://doi.org/10.1177/0891242416674808

[54] Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. Journal of the Academy of Marketing Science, 43, 115–135.

[55] Henseler, J., Ringle, C. M., & Sinkovics, R. R. (2009). The Use of Partial Least Squares Path Modeling in International Marketing. https://api.semanticscholar.org/CorpusID:16384423

[56] Ibrahim Adedeji Adeniran, Christianah Pelumi Efunniyi, Olajide Soji Osundare, & Angela Omozele Abhulimen. (2024). Optimizing logistics and supply chain management through advanced analytics: Insights from industries. International Journal of Scholarly Research in Engineering and Technology, 4(1), 052–061. https://doi.org/10.56781/ijsret.2024.4.1.0020

[57] International Labour Conference. (2007). The promotion of sustainable enterprise.

[58] Iyer, K. N. S., Srivastava, P., & Rawwas, M. Y. A. (2014). Aligning Supply Chain Relational Strategy with the Market Environment: Implications for Operational Performance. Journal of Marketing Theory and Practice, 22, 53–72. https://api.semanticscholar.org/CorpusID:167398841

[59] Jadhav, A., Orr, S., & Malik, M. (2019). The role of supply chain orientation in achieving supply chain sustainability. International Journal of Production Economics, 217, 112–125.

[60] Jia, F., Pan, T., He, Q., Zhang, T., & Chen, L. (2024). Supply chain design: implications for sustainability. International Journal of Logistics Research and Applications, 1–24. https://doi.org/10.1080/13675567.2024.2313058

[61] Kang, M., Yang, M. G., Park, Y., & Huo, B. (2018). Supply chain integration and its impact on sustainability. Industrial Management & Data Systems, 118(9), 1749–1765.

[62] Ketchen Jr, D. J., & Hult, G. T. M. (2007). Bridging organization theory and supply chain management: The case of best value supply chains. Journal of Operations Management, 25(2), 573–580.

[63] Kim, Y. H., & Schoenherr, T. (2018). The Effects of Supply Chain Integration on the Cost Efficiency of Contract Manufacturing. Journal of Supply Chain Management, 54(3), 42–64. https://doi.org/10.1111/jscm.12168

[64] Kopnina, H., & Blewitt, J. (2014). Sustainable business: Key issues. Routledge.

[65] Kramar, R. (2014). Beyond strategic human resource management: is sustainable human resource management the next approach? The International Journal of Human Resource Management, 25(8), 1069–1089.

[66] Laurin, F., & Fantazy, K. (2017). Sustainable supply chain management: a case study at IKEA. Transnational Corporations Review, 9(4), 309–318. https://doi.org/10.1080/19186444.2017.1401208

[67] Lee, Y., & Kincade, D. H. (2003). US apparel manufacturers' company characteristic differences based on SCM activities. Journal of Fashion Marketing and Management: An International Journal, 7(1), 31–48. https://doi.org/10.1108/13612020310464359

[68] Lin, M.-J. J., & Chen, C.-J. (2008). Integration and knowledge sharing: transforming to long-term competitive advantage. International Journal of Organizational Analysis, 16, 83–108. https://api.semanticscholar.org/CorpusID:144564719

[69] Lin, Y.-H., Chen, C.-Y., & Wu, S.-I. (2020). Efficiency and Quality of Data Collection Among Public Mental Health Surveys Conducted During the COVID-19 Pandemic: Systematic Review. Journal of Medical Internet Research, 23. https://api.semanticscholar.org/CorpusID:232016673

[70] Lozano, R. (2015). A Holistic Perspective on Corporate Sustainability Drivers. Corporate Social Responsibility and Environmental Management, 22(1), 32–44. https://doi.org/10.1002/csr.1325

[71] Madhani, P. M. (2020). Customer-focused supply chain strategy: developing 4Rs framework for enhancing competitive advantages. International Journal of Services and Operations Management. https://api.semanticscholar.org/CorpusID:225417040

[72] Manasakis, C. (2018). Business ethics and corporate social responsibility. Managerial and Decision Economics, 39(4), 486–497. https://doi.org/10.1002/mde.2921

[73] Masoumi, S. M., Kazemi, N., & Abdul-Rashid, S. H. (2019). Sustainable Supply Chain Management in the Automotive Industry: A Process-Oriented Review. Sustainability, 11(14), 3945. https://doi.org/10.3390/su11143945

[74] McKinnon, A., Browne, M., Whiteing, A., & Piecyk, M. (2015). Green logistics: Improving the environmental sustainability of logistics. Kogan Page Publishers.

[75] McKone-Sweet, K. E., & Lee, Y.-T. (2009). Development and analysis of a supply chain strategy taxonomy. Journal of Supply Chain Management, 45, 3–24. https://api.semanticscholar.org/CorpusID:167333266

[76] Mebratu, D. (1998). Sustainability and sustainable development: historical and conceptual review. Environmental Impact Assessment Review, 18(6), 493–520.

[77] Melnyk, S. A., Davis, E. W., Spekman, R. E., & Sandor, J. (2010). Outcome-driven supply chains. MIT Sloan Management Review.

[78] Mentzer, J. T., DeWitt, W., Keebler, J. S., Min, S., Nix, N. W., Smith, C. D., & Zacharia, Z. G. (2001). Defining supply chain management. Journal of Business Logistics, 22(2), 1–25.

[79] Mentzer, J. T., Stank, T. P., & Esper, T. L. (2008). Supply chain management and its relationship to logistics, marketing, production, and operations management. Journal of Business Logistics, 29(1), 31–46. https://doi.org/10.1002/j.2158-1592.2008.tb00067.x

[80] Monczka, R. M., Handfield, R. B., Giunipero, L. C., & Patterson, J. L. (2021). Purchasing & supply chain management. Cengage Learning.

[81] Muñoz-Torres, M. J., Fernández-Izquierdo, M. Á., Rivera-Lirio, J. M., Ferrero-Ferrero, I., Escrig-Olmedo, E., Gisbert-Navarro, J. V., & Marullo, M. C. (2018). An Assessment Tool to Integrate Sustainability Principles into the Global Supply Chain. Sustainability, 10(2), 535. https://doi.org/10.3390/su10020535

[82] Najjar, M., Small, M. H., & M. Yasin, M. (2020). Social Sustainability Strategy across the Supply Chain: A Conceptual Approach from the Organisational Perspective. Sustainability, 12(24), 10438. https://doi.org/10.3390/su122410438

[83] Nakandala, D., & Lau, H. C. W. (2019). Innovative adoption of hybrid supply chain strategies in urban local fresh food supply chain. Supply Chain Management: An International Journal, 24(2), 241–255.

[84] Norris, S., Hagenbeck, J., & Schaltegger, S. (2021). Linking sustainable business models and supply chains — Toward an integrated value creation framework. Business Strategy and the Environment. https://api.semanticscholar.org/CorpusID:237858637

[85] Nunnally, J. (1994). Psychometric theory. (No Title).

[86] Oliver, R. K., & Webber, M. D. (1982). Supply chain management: Logistics catches up with strategy. Outlook, Booz, Allen and Hamilton Inc.

[87] Pagell, M., & Wu, Z. (2009). Building a more complete theory of sustainable supply chain management using case studies of 10 exemplars. Journal of Supply Chain Management, 45(2), 37–56. https://doi.org/10.1111/j.1745-493X.2009.03162.x

[88] Pettit, T. J., Fiksel, J., & Croxton, K. L. (2010). Ensuring supply chain resilience: development of a conceptual framework. Journal of Business Logistics, 31, 1–21. https://api.semanticscholar.org/CorpusID:168081433

[89] Porter, M., & Van der Linde, C. (1995). Green and competitive: ending the stalemate. The Dynamics of the Eco-Efficient Economy: Environmental Regulation and Competitive Advantage, 33, 120–134.

[90] Qi, Y., Boyer, K. K., & Zhao, X. (2009). Supply chain strategy, product characteristics, and performance impact: evidence from Chinese manufacturers. Decision Sciences, 40(4), 667–695.

[91] Rao, P., & Holt, D. (2005). Do green supply chains lead to competitiveness and economic performance? International Journal of Operations & Production Management, 25(9), 898–916.

[92] Razzak, I., Perez-Franco, R., & Eklund, P. W. (2021). Call for Special Issue Papers: Levering Emerging Technologies in Supply Chain Management: Deadline for Manuscript Submission: February 26, 2022. Big Data, 9 5, 406–407. https://api.semanticscholar.org/CorpusID:239027297

[93] Reijnders, L. (2021). Substitution, natural capital and sustainability. Journal of Integrative Environmental Sciences, 18(1), 115–142. https://doi.org/10.1080/1943815X.2021.2007133

[94] Rice, J. B., & Sheffi, Y. (2005). A supply chain view of the resilient enterprise. MIT Sloan Management Review, 47, 41–48. https://api.semanticscholar.org/CorpusID:51541235

[95] Sarkis, J., & Zhu, Q. (2018). Environmental sustainability and production: taking the road less travelled. International Journal of Production Research, 56(1–2), 743–759. https://doi.org/10.1080/00207543.2017.1365182

[96] Saunders, M. (2009). Research methods for business students. Person Education Limited.

[97] Schonberger, R. J. (2007). Japanese production management: An evolution—With mixed success. Journal of Operations Management, 25(2), 403–419.

[98] Sekaran, U. (2016). Research methods for business: A skill building approach. John Wiley & Sons.

[99] Sharma, M., Dhir, A., AlKatheeri, H., Khan, M., & Ajmal, M. M. (2023). Greening of supply chain to drive performance through logical integration of supply chain resources. Business Strategy and the Environment, 32(6), 3833–3847. https://doi.org/10.1002/bse.3340

[100] Siems, E., Seuring, S., & Schilling, L. (2023). Stakeholder roles in sustainable supply chain management: a literature review. Journal of Business Economics, 93(4), 747–775. https://doi.org/10.1007/s11573-022-01117-5

[101] Sillanpää, I., & Sillanpää, S. (2014). Supply Chain Strategy: Empirical Case Study in Europe and Asia. Management Science, 9, 95–115. https://api.semanticscholar.org/CorpusID:21963805

[102] Simchi-Levi, D., Wang, H., & Wei, Y. (2018). Increasing supply chain robustness through process flexibility and inventory. Production and Operations Management, 27(8), 1476–1491.

[103] Srivastava, S. K. (2007). Green supply-chain management: a state-of-the-art literature review. International Journal of Management Reviews, 9(1), 53–80.

[104] Stank, T. P., & Goldsby, T. J. (2000). A framework for transportation decision making in an integrated supply chain. Supply Chain Management, 5, 71–78. https://api.semanticscholar.org/CorpusID:168133432

[105] Stevens, G. C. (1990). Successful Supply-Chain Management. Management Decision, 28. https://api.semanticscholar.org/CorpusID:154650376

[106] Stonebraker, P. W., & Afifi, R. (2004). Toward a contingency theory of supply chains. Management Decision, 42, 1131–1144. https://api.semanticscholar.org/CorpusID:154263245

[107] Swanson, D., Goel, L., Francisco, K., & Stock, J. (2018). An analysis of supply chain management research by topic. Supply Chain Management: An International Journal, 23(2), 100–116.

[108] Talluri, S., Kull, T. J., Yildiz, H., & Yoon, J. (2013). Assessing the Efficiency of Risk Mitigation Strategies in Supply Chains. Journal of Business Logistics, 34, 253–269. https://api.semanticscholar.org/CorpusID:167648076

[109] Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. Strategic Management Journal, 18(7), 509–533.

[110] Thorlakson, T., de Zegher, J. F., & Lambin, E. F. (2018). Companies' contribution to sustainability through global supply chains. Proceedings of the National Academy of Sciences, 115(9), 2072–2077. https://doi.org/10.1073/pnas.1716695115

[111] Touboulic, A., & Walker, H. (2015). Theories in sustainable supply chain management: a structured literature review. International Journal of Physical Distribution & Logistics Management, 45(1/2), 16–42.

[112] Vesal, M., Siahtiri, V., & O'Cass, A. (2021). Strengthening B2B brands by signalling environmental sustainability and managing customer relationships. Industrial Marketing Management, 92, 321–331. https://doi.org/10.1016/j.indmarman.2020.02.024

[113] Wang, C.-N., Ho, H.-X., Luo, S.-H., & Lin, T.-F. (2017). An Integrated Approach to Evaluating and Selecting Green Logistics Providers for Sustainable Development. Sustainability, 9(2), 218. https://doi.org/10.3390/su9020218

[114] Wang, Z., & Sarkis, J. (2013). Investigating the relationship of sustainable supply chain management with corporate financial performance. International Journal of Productivity and Performance Management, 62(8), 871–888. https://doi.org/10.1108/IJPPM-03-2013-0033

[115] Wheelen, T. L., & Hunger, J. D. (2010). Strategic management and business policy: achieving. Upper Saddle River, NJ: Pearson Prentice Hall.

[116] World Commission on Environment and Development. (1987). Our common future.

[117] Wu, L., Subramanian, N., Abdulrahman, M. D.-A., Liu, C., Lai, K., & Pawar, K. S. (2015). The Impact of Integrated Practices of Lean, Green, and Social Management Systems on Firm Sustainability Performance—Evidence from Chinese Fashion Auto-Parts Suppliers. Sustainability, 7, 3838–3858. https://api.semanticscholar.org/CorpusID:2507691

[118] Yadav, S., Garg, D., & Luthra, S. (2021). Development of IoT based data-driven agriculture supply chain performance measurement framework. Journal of Enterprise Information Management, 34(1), 292–327.

[119] Zavala-Alcívar, A., Verdecho, M. J., & Alfaro-Saíz, J.-J. (2020). A Conceptual Framework to Manage Resilience and Increase Sustainability in the Supply Chain. Sustainability. https://api.semanticscholar.org/CorpusID:225437734

[120] Zelbst, P. J., Green Jr, K. W., Sower, V. E., & Baker, G. (2010). RFID utilization and information sharing: the impact on supply chain performance. Journal of Business & Industrial Marketing, 25(8), 582–589.